ACUTE ANTERIOR POLIOMYELITIS.

A Review of Cases and Literature.

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THESIS PRESENTED

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CONTENTS.

INTRODUCTION.

During tenure of a post at the Princess Margaret Rose Hospital, 159 cases of anterior poliomyelitis were seen, in various stages of the disease. It was proposed in this thesis to attempt to correlate observations made during treatment, and to carry out a survey of the literature.

HISTORY.

As with several other diseases, doubt exists as to whether acute anterior poliomyelitis is a comparatively new disease dating from the eighteenth century, when descriptions first began to appear in medical literature; or whether it is a disease which existed in prehistoric times.

Underwood, in 1784, is credited with the first description of the disease; but this description is confused by reference to the occurrence in some cases of suppuration of the spine, and could equally concern Pott's disease of the spine. In a later edition of his book in 1799 a clearer description of poliomyelitis occurs.

There exists earlier probable evidence of the disease. In the Carlsberg Glyptothec at Copenhagen is an/

an Egyptian style c. 1580 B.C., depicting clearly a king's son with a typical equinus deformity with shortening of the leg.[3] This might possibly have been due to other nervous lesions but the commonest cause of such deformity today is poliomyelitis. Ruhrah also claims that presumptive evidence of poliomyelitis is to be found in Egyptian mummies c. 3700 B.C.[62]

Hippocrates describes an epidemic on the Island of Thasos which resulted in many cases of paralysis.

In 1921 Norse remains were found in South Greenland and dated by costume to the 15th century. Twenty-five bodies, of which six had physical deformities were found and Aycock[1] suggests these were due to Poliomyelitis.

Such is the evidence for an early existence of the disease which at best must be held inconclusive.

Returning to surer ground, the next reference occurs in 1836; when Badham describes several cases with good clinical descriptions and in one case a note of a biphasic course. Hains in 1840[6] described the disease fully and suggested the condition was due to implication of the spinal cord. Medin in 1887 described 44 cases in Stockholm and noted a biphasic course in several.

The term Heine-Medin disease was proposed by Wickman in 1907 when he was studying the 1905 epidemic in Sweden. There the isolated farms allowed of epidemiological/

epidemiological study and he suggested that the disease was due to an infection by microorganisms conveyed by person to person and also that non-sufferers played a part in carrying the infection. Previously "teething" had been held to be the cause by most. Thus Sir Walter Scott, who had an attack in 1733 which left him with a deformed foot, was said to "have a fever which often accompanies the cutting of large teeth".

V. Reinecke and V. Recklinghausen in Germany, and Cornil in France described in 1863 the lesions in the anterior horns and lateral columns of the spinal cord. Rissler first investigated the histology of the acute cases and his work was completed by Harbitz and Scheel (1907) Wickman (1901-1905) Strauss (1910) and Peabody, Draper, and Dochez (1912).

The first adult case was described by Vogt in 1859[4].

The first recorded epidemic in modern medicine was in 1905 when 1000 cases occurred in Sweden. By 1908 cases were being reported in small series widely over Europe and America.

Since then epidemics of large proportions have occurred in Australia and America where most of the experimental work on serum has been carried out and to a lesser extent in New Zealand. In 1909, the responsible virus was isolated in the Rockfeller Institute by Flexner and has been kept alive by passage since.

PATHOLOGY.

There is a voluminous literature on this aspect of the disease and an almost complete agreement has been reached.

The pathology has a certain clinical application and it is considered sufficient to give generally accepted views on the pathology and epidemiology with which there is very little recent argument found in the literature.[7]

The bacteriology was established and confirmed by Flexner Lewis, V. Weisner, and Levadite; and the responsible virus was isolated.

The virus has a neurotropic affinity and attacks the grey matter, especially the anterior cornua of the spinal cord. Histologically the lesions are hyperaemia, perivascular collections of lymphocytes, and degeneration of the large motor cells. Sometimes the whole thickness of the cord may become involved and a transverse myelitis result.

Widespread visceral lesions are described including hyperplasia of the tonsils, spleen, and lymphatic glands, and cloudy swelling of the various organs such as is found in any infection.

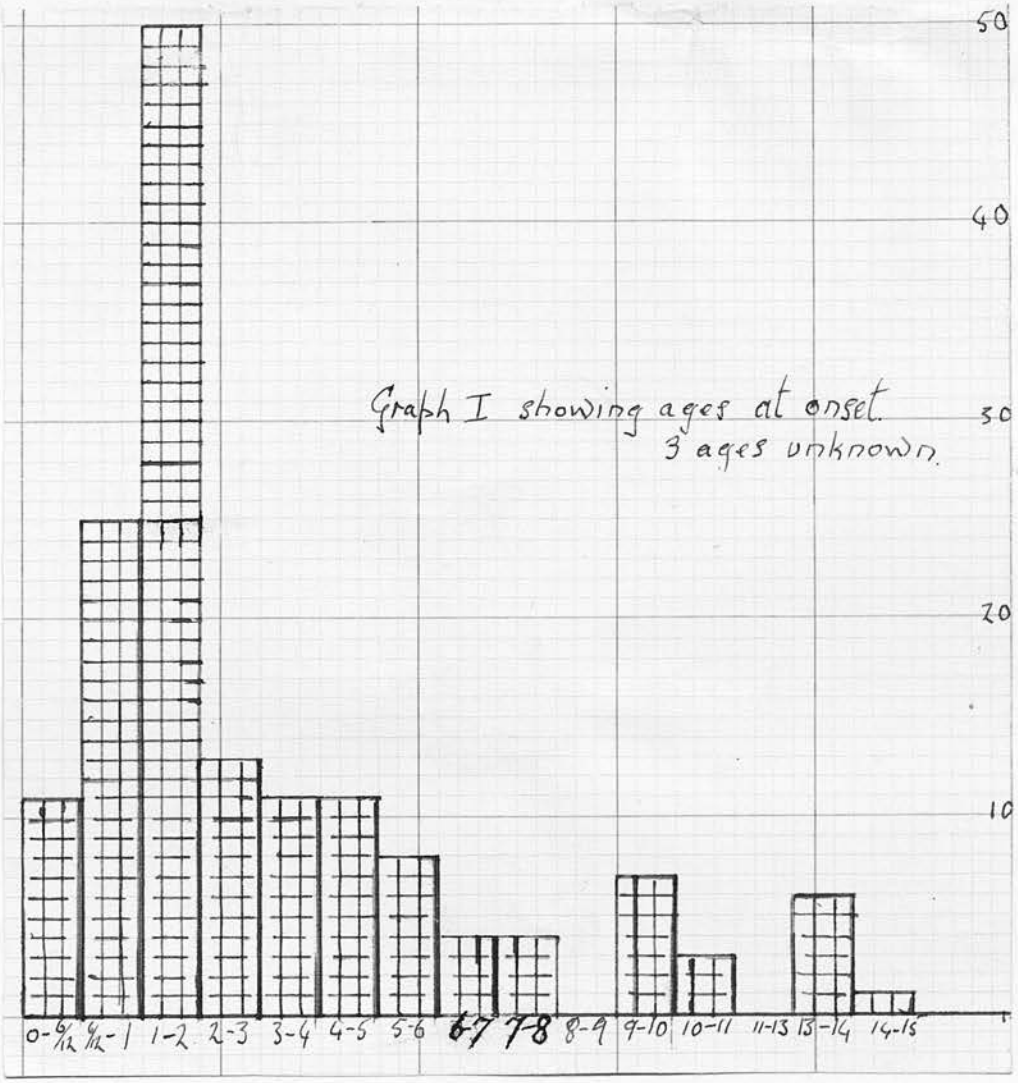
The virus can be demonstrated in the nasopharynx in the acute stage of the disease and has been shown to be capable of reaching the central nervous system via/

via the axis cylinders of the olfactory nerve. It has never been demonstrated in the blood of acute cases and it seems that the olfactory nerve must be the usual, if not the only route.[9] The virus has also been shown to be capable of passing along the peripheral nerves. Nerve section experiment has been carried out showing that after inoculation and section of the nerve the virus does not reach the central nervous system.

Infection is a droplet one and there is not the slightest evidence that fomites play a part.

Infection, however, can rarely be traced from case to case and this probably results from the fact that subclinical and abortive types are common and the immunity rate therefore high. In vitro the serum of 80 % of adults neutralises the virus.[11]

Immune persons may be carriers but such investigations as have been possible appear to show the sequence.. case-subclinical case-case-subclinical case - case. The Victoria report[8] gives an illustrative sequence. A child (X), convalescing in hospital from scarlet fever, developed poliomyelitis. The child in the next cot had moderately severe scarlet fever but its symptoms suggested more than that. It was discovered that he came from a house in which another boy had had an influenza-like illness; the brother of the secon child had poliomyelitis. The nurse who attended (X) on development of his attack complained of vague pains/


50
40
30
20
10
Graph I showing ages at onset.
3 ages unknown.
0-½ ½-1 1-2 2-3 3-4 4-5 5-6 6-7 7-8 8-9 9-10 10-11 11-13 13-14 14-15

GRAPH 1.

pains in the limbs a fortnight later and was off duty for a few days. She had also nursed a child with whooping cough who developed poliomyelitis a fortnight after the nurse's illness.

Immunity is said to be high for the first eight months or so of life and then to decrease until the fifth year after which it gradually rises.[10]

The age distribution of the cases under review is shown in graph I. By far the largest number of cases occurred in the age period from six months to five years.

The disease has a well marked seasonal incidence in the Autumn. It is usually said more commonly to attack male children, according to the Americans especially the healthy handsome male child. In this series there were 76 males and 83 females.

The incubation period is said to be 2 to 10 days and usually three or four days.

American Public Health Laws insist on a three week quarantine for close contacts, but its value is doubtful. In this series of 159 cases the only cases where infection could be traced were in a brother and sister, the one developing the disease six days after the other.

In another reported series of 622 only 8 had a history of contact and of 2070 patients exposed to contact only 14 cases occurred[11].

18 cases are reported of a second attack of poliomyelitis in the same patient. 1 case is reported of an alleged third attack[11].

Adults are unusually attacked in this country but in American epidemics 10% have on occasion been adults (Ruhrah and Mayer)[12].

Cases have been reported of alleged intrauterine attacks (Morton[15] Batten[14]).

The disease has been reported in infants aged 12 days,(1 case) 3 weeks, (1) and 1 month (2) by Duchenne, Bramwell, and Sinkler respectively.

Polio-encephalitis.

In a varying but usually small proportion of cases in an epidemic the virus attacks the grey matter of the cerebrum, with or without, implication of the spinal cord.

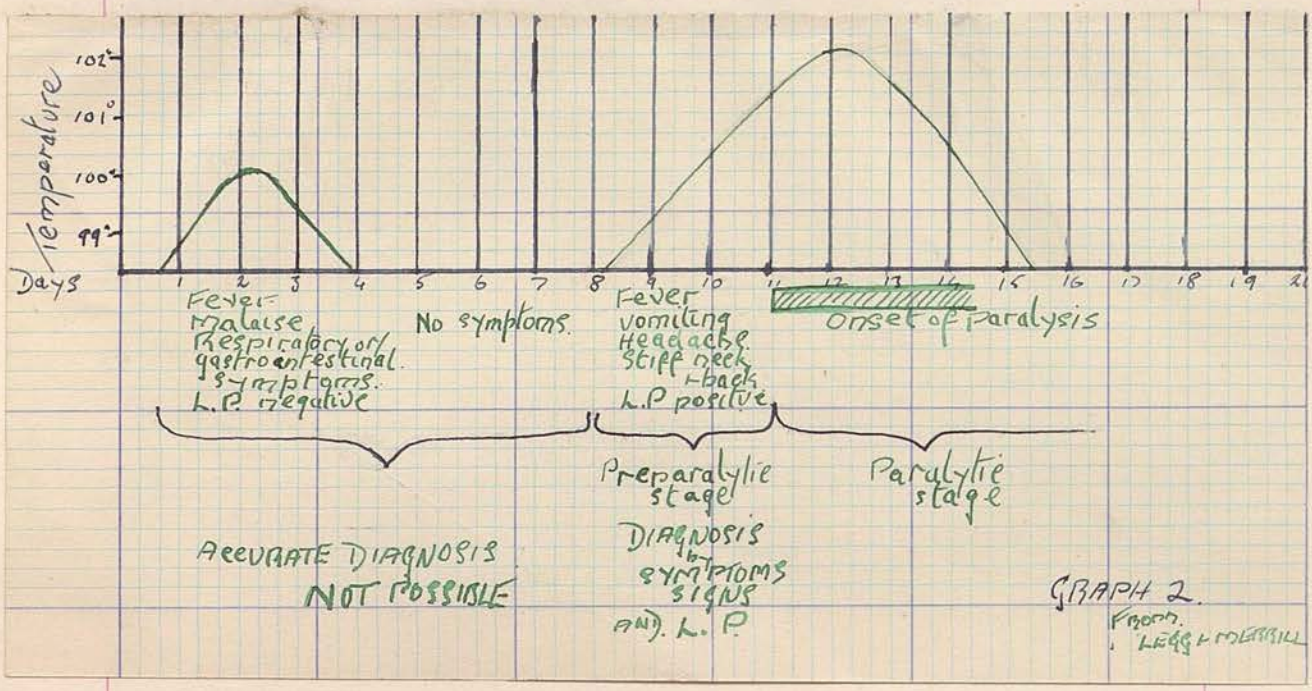
The clinical picture varies according to the site of the cerebral lesions,; upper motor neurone lesions, cranial palsies, hemianopia, and cerebellar dysfunction have all occurred.

No cases occurred in this series. In the Swedish epidemic there were no cases seen in 100 cases of anterior poliomyelitis; in the 1907 New York epidemic none in 2000 cases.

In/

In England in the Broadstairs 'epidemic' in 1926 out of 55 cases 32 were said to be polio-encephalitis, almost all in patients over 5 years of age.

In the 1934 epidemic in Denmark Jenson[15a] states that 15% of cases were polio-encephalitis, all in patients over 15 years of age. The older cases were noted in the later stages of the epidemic and Jenson suggests an increase in the virulence of the virus by passage.


Temperature
102°
101°
100°
99°
Days
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
Fever
Malaise
Respiratory or
gastro-intestinal
symptoms.
L.P. negative
No symptoms.
Fever
vomiting
Headache
Stiff neck
+back
L.P positive
Onset of paralysis
Preparalytic
stage
Paralytic
stage
ACCURATE DIAGNOSIS
NOT POSSIBLE
DIAGNOSIS
by
SYMPTOMS
SIGNS
AND L. P
GRAPH 2.
From.
LEGG & MERRILL

GRAPH 2.

CLINICAL FINDINGS.

Age and sex distribution have already been noted. In America it is said to be more frequent in families in a comfortable financial situation than among the poor; and in epidemic form it has usually a higher incidence in country rather than urban districts, where the immunity can be presumed to be higher. This incidence was not noted in the cases under discussion. Cases occurred in sporadic form with an aggregation occurring during the autumn.

The accompanying diagram is taken from Legg and Merrill's book[16]. It shows what may be taken as the 'classical' form of poliomyelitis.

Onset. This is similar to the onset of any infection and symptoms are general. The patient suffers from fever and malaise. The temperature is rarely high and usually under 101°F. There may be respiratory symptoms such as sore throat or coughing. Signs of a mild bronchitis may be found. Vomiting or diarrhoea may occur, the latter being relatively common. Occasionally skin rashes occur, simulating scarlatina or morbilla. Epistaxis has been noted sufficiently frequently for mention.

In this stage examination of the spinal fluid is negative.

An/

An accurate diagnosis in this stage is not possible. in an epidemic the occurrence of these symptoms would warrant suspicion.

After this stage, which lasts three or four days, there is a period of freedom from symptoms lasting several days.

Preparalytic stage. About the eighth day the temperature again rises often reaching a higher level (usually c.102°F.) about the eleventh or twelfth day of the illness. The first three or four days of this phase are characterised by the occurrence of such symptoms as headache, drowsiness, stiffness of the back and neck, vomiting in some cases,-- in general a varying degree of meningism. Another important symptom in this stage is muscle pain which may occur in any or almost every muscle. This symptom is however, more constant after the paralysis has started.

The following account is taken from an article by Aycock and Luther[21] on preparalytic poliomyelitis.

"On observation the child seems prostrated to a greater degree than the temperature which is usually under 102°F would seem to indicate. The face is flushed, the expression is anxious, and there is frequently pallor about the nose and mouth. The throat is mildly infected but not enough in itself to account for the child's condition. The pulse is usually rapid out of proportion/

proportion to the temperature. The rest of the physical examination is negative except that which deals with the nervous system. There is frequently a coarse tremor when the child moves which may be very striking. There is distinct rigidity of the neck; however, this is not as marked as that usually seen in meningitis. The patient tilts the head on the neck but does not bend the neck on the shoulders. As a result the head can be brought half way forward when resistance is encountered and the child complains of pain. More constant, and more characteristic than the stiffness of the neck is the stiffness of the spine. This is best brought out by having the patient sit up in bed and try to bend the head down on to the knees. The average child, ill with other infectious disease has no difficulty in doing this. If these patients bend forward at all it is from the hips with the spine held rigidly. Many of them cannot assume a comfortable sitting position without propping themselves up on their arms. Anterior flexion of the spine often causes a drawing pain in the lumbar region. Kernig's sign is not usually marked at this stage, but the deep reflexes are frequently hyperactive rather than diminished as they are later. A cerebral ache is almost always present, not infrequently becoming a purplish, irregular, blotchy line, a half inch or more in width. It

is/

is the presence of these symptoms and signs which justifies a probable diagnosis of anterior poliomyelitis and calls for the final steps in diagnosis.

This step is the examination of the cerebro-spinal fluid. The fluid is usually under a moderately increased pressure (a 150 to 200 m.m. of water.) Microscopically the fluid appears to be clear but when viewed by transmitted light it presents a faint haziness, which has been described by Zingher as "a ground glass appearance". There is an increase in cells usually between 50 and 250 but occasionally as high as 700 to 800 or as low as 20. The cells may be largely polymorphonuclear early, but later are lymphocytes."

Paralytic stage. If the disease does not prove abortive paralysis sets in round the 11th day from the onset of the disease. The paralysis may increase for less than 24 hours, or it may be progressive over a period of days -- said to be a bad prognostic sign.[24] Muscle pain almost always occurs in this stage and is experienced in the paralysed muscles. It may be very severe and is one of the commonest causes of wrong diagnosis.

There are no sensory changes.

Subclinical attacks. It must be emphasised that even once this 'classical' train of events has started it/

it may be aborted at any stage. Indeed it is probable that subclinical disease is more common than paralysis.

Thus Jones and Lovett[17] state that probably not more than 25% of cases which can be diagnosed as poliomyelitis actually develop paralysis. Harmon[18] describes 531 cases diagnosed as poliomyelitis of whom 380 never developed paralysis, although no specific treatment was given.

Quigley[19] reports a series of 600 cases diagnosed as poliomyelitis with possibly a more stringent standard namely, that prodromal symptoms should be present and the cell count in the C.S.F. be greater than 20 per cubic millimetre. Of these 600 cases 200 never developed paralysis. Paralysis, however, occurred in all 12 cases under one year of age, and in 51 out of 52 cases under two years of age -- this may be accounted for either by the lack of immune bodies at this age or else to the difficulties in diagnosis of the pre-paralytic stage in babies.

Eagles, Jenson and Henningsen[20] similarly stress the number of cases which do not develop paralysis, writing of the 1934 epidemic in Denmark. Davidson[11] in a review of epidemics in the U.S.A. states that in epidemics the number of diagnosed cases which develop paralysis may be much lower than 50%, and may even be as low as 10%.

It/

It may thus be taken that patients can traverse the classical stages of the disease stopping short of paralysis. This feature of the disease obviously makes it very difficult to assess the value of any specific treatment.

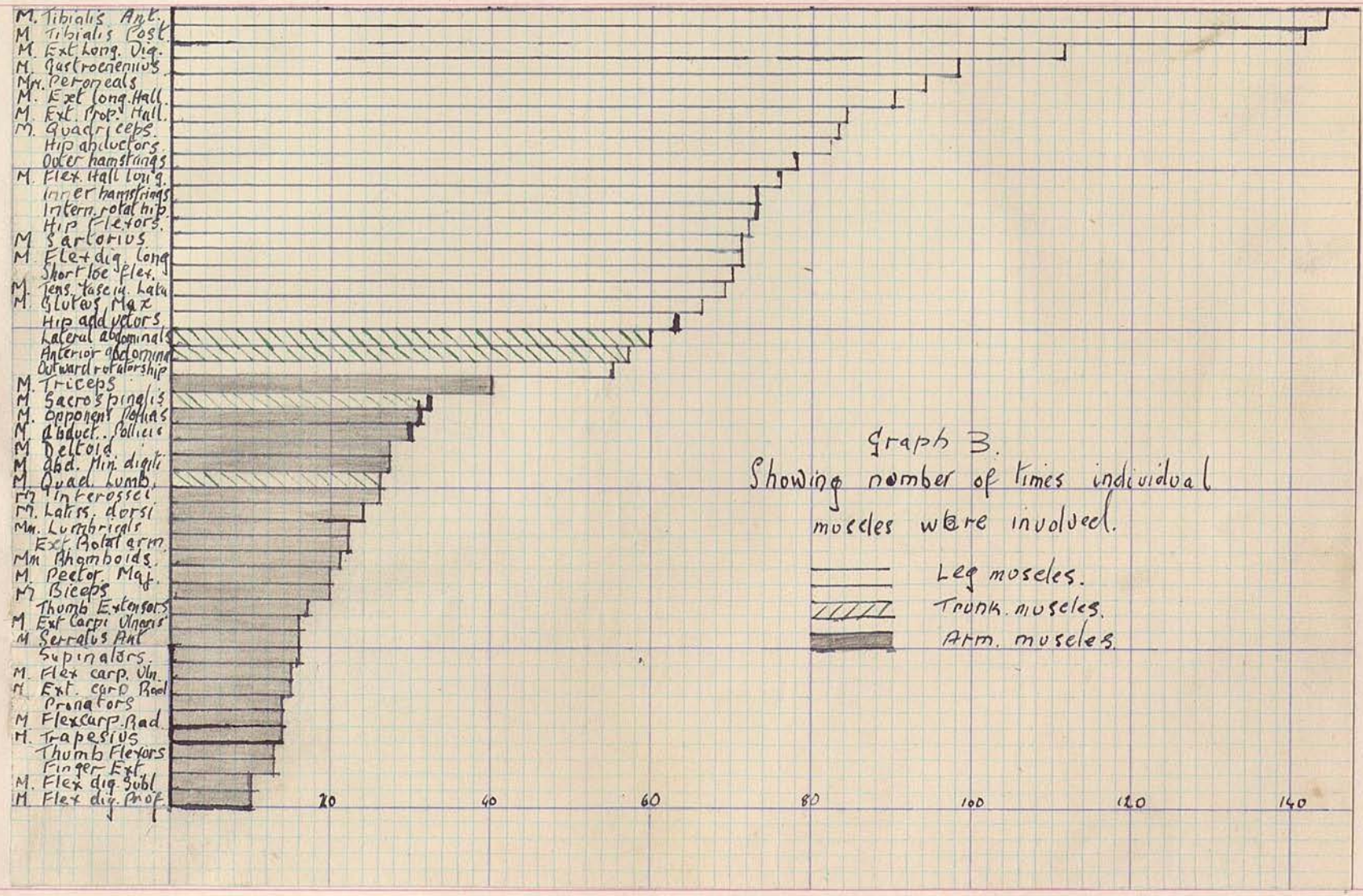
It must be emphasised that this so-called bi-phasic course is far from constantly followed. The two phases are frequently, even usually, foreshortened or superimposed. The constancy has varied in different epidemics.

In the cases presented complete details of the early clinical appearances are incomplete, as in most cases the children were in isolation hospitals or at home for the first week. The following symptoms were elicited however.

Fever	113 cases	Headache	18 cases
Spine Sign	80 "	Biphasic course	15 "
Muscle pain	50 "	Convulsions	6 "
Stiff neck	31 "	Twitching	5 "
Vomiting	29 "	Diarrhoea	4 "
Coryza	18 "	Skin rashes	4 "
		Epistaxis	2 "

In 36 cases no satisfactory clinical history could be obtained, on account of infancy, or parents being far from the hospital and not being seen.

In/


M. Tibialis Ant.
M. Tibialis Post.
M. Ext. long. Dig.
M. Gastrocnemius
Mm. Peroneals
M. Ext long. Hall.
M. Ext. Prop. Hall.
M. Quadriceps.
Hip abductors.
Outer hamstrings
M. Flex. Hall long.
Inner hamstrings
Intern. rotat hip.
Hip Flexors.
M. Sartorius
M. Flex dig. long
Short toe flex.
M. Tens. fascia lata
M. Gluteus Max
Hip adductors.
Lateral abdominals
Anterior abdominal
Outward rotatorship
M. Triceps
M. Sacrospinalis
M. Opponent Pollicis
M. Abduct. Pollicis
M. Deltoid
M. Abd. Min. digiti
M. Quad. Lumb.
Mm. Interossei
M. Latiss. dorsi
Mm. Lumbricals
Ext. Rotat arm.
Mm. Rhomboids.
M. Pector. Maj.
M. Biceps
Thumb Extensors
M. Ext Carpi Ulnaris
M. Serratus Ant
Supinators.
M. Flex carp. Uln.
M. Ext. carp Rad
Pronators
M. Flexcarp. Rad.
M. Trapezius
Thumb Flexors
Finger Ext.
M. Flex dig. Subl.
M. Flex dig. Prof.
20
40
60
80
100
120
140
Graph B.
Showing number of times individual
muscles were involved.
Leg muscles.
Trunk. muscles.
Arm. muscles.

In this series there was a definite predominance in muscles or muscle groups affected. Thus the upper limbs were affected in 36 cases only. Of these both arms in 10 cases, the left arm in 14 and the right arm was affected in 12 cases.

Lower limbs alone were affected in 117 cases and both upper and lower limbs in 22 cases. Two lower limbs were affected in 42 cases. There was no predominating side on which the lesions occurred.

Four limbs were affected in 8 cases. The brunt of the paralysis was thus borne by the legs and quadriplegia was uncommon.

A much greater variation occurs in the frequency with which individual muscles are affected as is shown by the following table of muscles or muscle groups. The total number of muscles involved was 3430, made up of from 3 to 93 in any one case.

This table shows the predominance of lower limb muscles and the great predominance of lesions affecting the dorsiflexors and invertors of the foot.

The trunk muscles are approximately mid-way down the table.

The most frequently involved upper limb muscles are the triceps, small thumb muscles and the deltoid in that order. The other small palmar muscles rank relatively high in the list, while least frequently involved are the extensors and flexors of the fingers.

In/

Another observation made among these children was the psychological disturbance in the older children suffering from a severe attack. This in several cases was so marked that parents said the whole temperament of the child had changed. It may have followed merely from a realization of their plight but one could not but draw a parallel between it and the changes occurring after epidemic encephalitis. Reserved "tough" boys would weep on the slightest provocation and a girl would deliberately soil her bed to attract nursing attention.

It is usually stated[24] that no mental changes occur, following poliomyelitis apart from the psychological problems common to all physical defectives. This aspect has been studied by R.G. Gordon among others, but is without the scope of this paper. It may be mentioned in this connection, however, that the Child Welfare Officer to the Fife County Council who was responsible for liason in following up these cases, in discussing this aspect gave it as his personal opinion that these children in general were more backward, age for age, than was to be accounted for merely by lack of opportunity caused by their physical defect.

DIAGNOSIS.

In the paralytic stage little difficulty should arise in diagnosis.

In two cases in the series a diagnosis was made of rheumatic fever in a general hospital. The muscle pain was put down to joint involvement and the paralysis to disinclination to use a painful limb. It was only when no improvement followed salicylates that a correct diagnosis was made. Obviously this mistake should not arise if points of maximum tenderness are marked out and voluntary muscle power tested if necessary in children by applying painful stimuli to obtain a withdrawal movement.

Under this heading however an interesting case, the only one of its kind, noted in the literature so far - was published recently[25]. Clinically this patient was an obvious case of poliomyelitis. A febrile illness was followed by a scattered lower motor neurone lesion and no doubt was entertained as to the diagnosis. By some chance nasal washings sent to the laboratory were inoculated into guinea pigs and monkeys who developed lymphatic choriomengitis on three separate occasions.

Thus rarely lymphatic choriomeningitis may so simulate acute poliomyelitis that differentiation is impossible/

impossible without the services of a very well equipped laboratory.

Fortunately as far as one can see the treatment of the case as one of poliomyelitis could do nothing but good.

In the preparalytic stage many other diseases can be, to some extent at least, simulated.

In this series the original diagnosis was as follows:-

measles in 3 cases
tuberculous meningitis in 3 cases
'teething' in 3 cases
'influenza' in 4 cases
bronchitis in 2 cases
pneumonia in 2 cases
scarlatina in 1 case
food-poisoning in 1 case
'gastritis' in 1 case
'acidosis' in 1 case

Knowing all the clinical appearances it is easy to see which predominated in any one of these cases.

The literature is full of similar lists of diseases wrongly diagnosed as poliomyelitis when attention has been drawn to it by an epidemic. [11, 26, 27]

Certain of the errors arise from the rashes, and respiratory or gastro-intestinal symptoms which may occur in the first phase of the disease and obviously mistakes in diagnosis must inevitably occur here; in sporadic cases poliomyelitis will be wrongly diagnosed as enteritis and during an epidemic enteritis will be wrongly thought to be the first stage of poliomyelitis.

These/

These errors however should only arise in the "typical" case where a biphasic course is followed. In the majority of cases the two "humps" are superimposed on one another, and while enteritis or rashes may be present there will also be evidence of meningeal irritation.

When respiratory symptoms predominate along with meningism pneumonia may be closely simulated.

The meningism exhibited by poliomyelitis differs somewhat from that in other diseases however, in being more related to the lower spine. Neck rigidity is not so marked nor is Kernig's sign but the so-called spine sign is very frequently present. The method of eliciting it is given under clinical findings. The constancy of this sign is noted throughout the literature.
10 28 29 30 31 32 33.

Interlinked with this sign in production and frequency are the "head drop" sign and Amoss' sign.

The first is elicited by lifting the supine child forward by the shoulders when the head falls back and the child is unable to bring it forward.

Amoss' sign shows the unwillingness of the sitting child to bear all the trunk weight on the spine and consists of asking the child to fold the arms across the chest and to keep the position. The child will soon revert to the position in which part of the body weight is/

is borne by the arms.

The cardinal symptoms may thus be taken as:-

1. Elevated temperature.
2. Cyanosis, circumoral pallor, and drowsiness.
3. Meningeal symptoms especially related to the lower spine.

The extensor response is rarely noted. The cardinal symptoms backed by a positive spine test render a diagnosis very likely and lumbar puncture should clinch it.

When muscle pain is an early feature other painful diseases - osteomyelitis, neuritis and even abdominal emergencies may to some degree be simulated unless care is taken to localise the maximum tenderness and observe its superficiality.

When the meningeal symptoms are marked, purulent or tuberculous meningitis must be excluded by lumbar puncture.

The C.S.F. findings repeated are -

Pressure - increased up to 150 - 200 m.m. of water.

Appearance - clear to reflected light "ground glass" appearance by transmitted light.

Cells - increased 20-800 usually 50-250. At first polymorphs, later lymphocytes when paralysis is present.

Globulin - increased.

Sugar - normal

Purulent meningitis is thus differentiated by appearance, cells and sugar.

T.B. meningitis shows usually a fine coagulum; the cells are lymphocytes mainly and the chlorides are low.

Reverting to sporadic cases where paralysis has occurred the following conditions remain for consideration.

Diphtheritic Paralysis. Here the history, absence of meningeal symptoms and signs, and of muscle pain should help.

All cases admitted as poliomyelitis were swabbed partly to avoid bringing infections into hospital and partly to exclude diphtheria. Apart from this C.S.F. findings would avoid this error.

Transverse Myelitis and other local lesions of the spine can be distinguished by distribution and type of the paralysis, presence of sensory changes, and C.S.F. changes.

Landré's ascending paralysis. This disease, if it is a separate entity, and not a syndrome occurring in several diseases, may closely simulate poliomyelitis and indeed a Landré type of the disease is described.

An ascending paralysis in childhood is more likely to/

to be poliomyelitis and a polymorphocytosis in the blood with lymphocytosis in the C.S.F. is in favour of poliomyelitis (Price).

Neuromyelitis Optica Devie.

For the sake of completeness this rarity is mentioned. Here the optic atrophy with sensory changes would differentiate it from poliomyelitis.

In young children the pseudo-paralysis of scurvy and syphilis may cause trouble again through insufficient care in localising tenderness to bone shafts and metaphyses respectively.

In older patients and when the disease is in the chronic stage the following conditions must be excluded.

Motor neurone disease. Here fibrillation in the wasting muscles together possibly with distribution and history are the prominent differences.

Peroneal muscular atrophy. In older children the question often arises as to whether a foot deformity with lower leg wasting is due to this disease or to an old poliomyelitis. The different prognosis renders differentiation important. Here the fibrillary tremors will be seen if necessary after a period of observation in hospital. In many cases a familial incidence may be noted.

Peripheral/

Peripheral neuritis. Alcoholic, lead, diabetic and beri beri peripheral neuritis should not give rise to trouble after a careful history and examination. Peripheral nerve trauma should be recognised by distribution.

TREATMENT.

A review of specific treatment will first be made and since modern medicine is in the first place preventive the various measures attempted will be quoted.

These fall under three headings, viz.-

1. Active immunisation.
2 Passive immunisation.
3. Chemical prophylaxis.

All have failed; perhaps not unexpectedly for the virus of poliomyelitis being a true neurotrope, it is doubtful if circulating antibodies can properly attack it.

1. Active Immunisation.

Three forms of polic vaccine have been on trial,- living attenuated virus, a dead virus, and a formolized virus.

No evidence of success has been produced, indeed in one series 12 cases of acute poliomyelitis developed in 2-12 days after attempted immunisation.[34,35,36] [36]

2. Passive Immunisation.

This has been attempted on a relatively large scale without success[37].

3. Chemical Prophylaxis.

This measure depends on the successful results of/

of spraying the nasopharynx of experimental animals with various chemicals with a view to forming a barrier to infection.

Tannic acid was first used and later 1% zinc sulphate which experimentally protected monkeys for three months. During an outbreak in Toronto in 1937 an attempt was made to apply this method to human beings, 5000 children with 6000 controls were sprayed with an insignificant difference in the number who developed the disease - 2.1% as conf. 2.9%[39].

It is also possible that permanent harm may be done to the nasal mucosa by such chemicals.[40]

Serum Therapy.

This form of treatment has had its enthusiastic exponents and has also been tested out under controlled conditions.

The claims of the enthusiasts will first be detailed. The sera used have been (1) pooled adult serum which has been shown to have a fairly high antibody content (2) Convalescent serum (3) Horse serum produced by immunising horses.- This last has been least used.

The use of serum was first suggested by Netter in 1911 for use in the preparalytic stage of poliomyelitis. It has never found any advocates for its use once paralysis has commenced. There is complete agreement that in that stage it is useless.

Zingher/

Zingher in 1916[41] treated 25 preparalytic cases with serum and 24 remained free from paralysis. There were no controls. It is doubtful if diagnosis in this series was accurate, it being recorded that among 88 cases admitted 5 died in 48 hours - 2 from tuberculous meningitis, 3 from pneumonia and 1 from gastro-enteritis.

Macnamara and Morgan[42] treated 88 cases and claimed a low mortality, a low average paralysis and few severe grades of paralysis. They had no adequate controls. Macnamara states elsewhere[43] that "no other therapy in medicine has been tested statistically and sees no reason why the use of serum should be."

Jenson[28] treated 3,938 cases in Denmark with "prompt clinical improvement" but no controls.

Aycock and Luther[21] treated 106 cases in which 64% developed paralysis and claimed a low (1%) mortality, low total paralysis and few severe grades of paralysis.

Paterson[44] treated 74 cases with serum, using it in paralysed cases as well. He gives no notes on individual results but forms the happy conclusion that "none can doubt the efficiency of serum".

Among the controlled series are the following reports.

Henry and Johnstone[38] treated 198 preparalytic cases -- 98 with serum and 100 without serum; results were inconclusive. In a German report[45] a series of 335 cases were treated, 145 with serum and 190 without.

The/

The conclusion was that no benefit was obtained by the use of serum.

Park treated 510 cases with serum and 408 without. 68% of the serum cases recovered with paralysis and 74% of the untreated cases without paralysis. Hyland et al[47] treated 52 preparalytic cases half with, and half without serum, with no appreciable difference clinically or statistically.

Fischer in a sound article[48] discusses the difficulty in assessing results but in his cases - 447 with serum and 102 controls public feeling during the epidemic insisted on serum and it was only when supplies ran out that control was possible - the outcome for untreated cases was no better, if as good as for the untreated.

Kramer, Aycock, et al[48] treating cases with large doses of serum, had 82 cases of which half were used as controls and "failed to obtain statistical evidence that serum was of value".

The conclusion to be drawn from these reports is that serum has been shown whenever the results are controlled, to be of no value.

Many reports speak of clinical improvement but in Park's large uncontrolled series every case was seen daily by several paediatricians who were unable to detect any clinical improvement attributable to serum.

This/

This conclusion is not surprising on consideration of the experimental work. While it is possible to prevent disease in monkeys by giving serum at the same time as inoculation with the virus Brodie[49] failed to protect inoculated monkeys in the earliest possible stage of actual disease. The pathogenesis of the disease - transmitted by nerve fibres - and purely neurotropic nature of the virus suggests a priori the ineffectiveness of serum.

It may certainly be taken that a charge of negligence against a practitioner for not giving serum could be successfully resisted.

In a disease with such sequelae it is inevitable that many purely empirical forms of treatment should have been tried and there are many reports of such therapy.

In particular the French appear to have a catholic taste in such therapeutics and most methods of treatment ranging from fixation abscesses to infra red rays are suggested.[33]

In this series no case was treated by serum.

The details of the general treatment were as follows.

Patients were nursed in open air wards as a general rule but it was found that this was not satisfactory for extensively paralysed cases, paralysed upper extremities and cases where vasomotor disturbances were/

were present. These children all suffered from the cold except in summer time and required prolonged heating up before daily physiotherapy could be carried out. Accordingly these cases were transferred to heated sidewards.

All cases diagnosed in the preparalytic stage were kept at absolute rest as it is probable that this has some effect on the amount of paralysis, although this again is almost impossible to prove.

When paralysis has set in, all affected limbs must be splinted in the neutral position; i.e. where all muscles as far as possible are in a state midway between full contraction and full relaxation. Thomas abduction frames were used together with improvised Kramer wire splints for the arms as a primary measure.

The period between the onset of paralysis and the cessation of muscle pain is known as the sensitive stage and lasts up to three weeks.

During this time no muscle exercises were carried out. Attention was devoted to splinting all affected limbs, measures to alleviate muscle pain and to prevent contractures of muscles or stiffness of joints. More elaborate splinting was carried out when the condition of the patient allowed. In all cases of trunk muscle involvement it was found best to make a complete plaster

case in which the patient lay. This cuts down the chances of a scoliosis developing and a well applied cast obviates bedsores.

The patient's trunk is wrapped round with wool bandages and then encased in plaster of paris. The plaster cast is then cut down the anterior axillary line leaving a deep shell. The anterior half is retained to allow the patient to be turned over while still retaining splintage, for nursing purposes, and to diminish the chances of urinary calculus developing (q.v.). The cast is then padded with felt and covered with stockinette before use.

If the legs were paralysed short downward projections were made over the backs of the thighs in which rested similar shells made for the legs. It was found best to have the splint made thus in two sections as it avoided cumbersome shells which broke unless very heavily reinforced.

Where neck muscles were involved the cast extended up and included the occiput. Where arm muscles were involved Kramer wire was incorporated in the plaster at arm level and bent to form splints.

In many cases it was found better in the lower leg to make the shells over a layer of stockinette only, with a small circle of felt over the heel. In this way they more accurately fitted the limb and avoided the foot/

foot slipping into equinus by gripping it better. Plaster sores were also avoided, as the pressure was more equally distributed, and there was a small cup under the heel when the felt was removed.

All casts were made so as to relax the paralysed muscles, and if both agonists and antagonists were involved, the neutral position was maintained.

In very young children it was found that Legg wire splints sometimes maintained better control and were less liable to slip and allow the foot to slip into plantar flexion.

In the lower limb the points requiring special attention were:-

1. Scrupulous care to avoid sores and daily examination for suspicious areas.
2. The avoidance of calcaneus or equinus deformity.
3. The avoidance of varus or valgus deformity.

Of the muscles controlling the hip joint, the adductors and abductors give rise to most trouble; and care is necessary to ensure that neither of the groups is stretched.

Abdominal paralysis was splinted by tight binders.

In the arm deltoid paralysis was treated in abduction. No special difficulty was found except that in the early stages these patients did better in a whole body cast with attached Kramer wire forming the abduction splint. This avoided the insidious onset of/

of a scoliosis due to the weight of an ambulant abduction frame.

Plaster of paris casts were used for the forearm muscles.

The relaxation of the small muscles of the hand gave rise to most difficulty. The physiological position is that of the hand holding a pint glass. This was obtained by a volar cast holding the wrist slightly dorsiflexed and the fingers curved. The difficulty arose in holding the thumb in such a position as would relax the opponens pollicis. It was found that this was the best obtained by moulding a plaster slab into the first interdigital cleft and round three aspects of the thumb holding it in the required position. The difficulty lies in securing the slight rotation of the first metacarpal which is an essential part of the movement of opposition. Another method suggested by Hyland[47] is the use of a fingerless glove with a ring on the ulnar side to which the thumb is tied over a pad stitched to the palm.

So much for the relaxation of affected muscles. Equally, or possibly more important is the avoidance of joint stiffness in this stage, by daily passive movement of every immobilised joint through its maximum painless range supporting paralysed muscles the meanwhile, and avoiding flail-like movements of the lower leg while manipulating the thigh.

Muscle/

Muscle pain was found to be best relieved by the application of moist heat in the form of soaks. The explanation of this pain is not altogether satisfactory. If it is a central phenomenon due to oedematous pressure on sensory tracts it is strange that it is so much relieved by local measures. It is possible that it is due to changes in the muscle fibres consequent upon their anterior horn cells being damaged.

The treatment in the sensitive stage may be summarised as follows:-

1. Splintage to relax all paresed muscles.
2. Passive movements once or twice daily of all immobilised joints to avoid stiffness.
3. Local heat to relieve muscle pain - usually applied also before passive movement is carried out.

No information of any value is to be got from electrical stimulation of muscles. It has the disadvantage of making the child afraid of the physiotherapy department - the word physiotherapy is less of a misnomer than massage, for the latter plays little part in treatment.

Muscle re-education. When the sensitive stage is over muscle re-education commences. Aims in this stage have been summarised as:-[4]

To retard the development of muscle atrophy.

To/

To prevent contractures or deformities.

Re-education in the use of recovering muscles.

In cases beyond recovery to educate the patient how to use the remaining muscles to best advantage.

In order to keep a check on the progress or otherwise it is necessary to have a simple series of standards for the active power of individual muscles. Those suggested by Legg[16] were used. Legg has also described a series of testing movements for which individual muscles or muscle groups are responsible.

The tests are carried out on a polished powdered surface over which a limb can with least possible friction be placed. The example of testing the quadriceps apparatus may be taken. The leg is held in the flexed position and the patient asked to straighten it. A hand held on the muscle determines whether there is any attempt at contraction. If there is, but the contraction fails to extend the knee against the pull of gravity on the lower leg, the patient is placed in the lateral position on the polished surface with the knee flexed and asked to extend it. The effect of gravity is now greatly diminished and the muscle may have enough power to move the leg over the 'frictionless' surface.

The standards used are therefore a measure of the active power of the different muscles or muscle groups.

Numbers/

Numbers are used to denote the power shown by each muscle as follows.-

0. Gone-- no contraction felt in the muscle.

1. Trace- Muscle can be felt to tighten but no movement is produced.

2. Poor-- The muscle produces movement with gravity 'eliminated'.

3. Fair-- The muscle can raise the part against gravity.

4. Good-- The muscle can raise the part against gravity and added resistance.

5. 'Normal'.

The first step in this stage of treatment is to subject each muscle or muscle group to testing along these lines and recording the results on a muscle chart (appendix). These were carried out at two monthly intervals and the improvements entered in red ink. In this way a complete record of the active power of the various paralysed muscles was kept.

In order to prevent errors in the first testing two safeguards are necessary. The child should have a short 'preliminary canter' the day before so that the tests are not completely strange to it. The second point is that the limbs to be tested should be warm, for a marked difference was found between a warm limb and the same limb cold and possibly rather blue. A radiant heat lamp was used to 'bake' the limb before testing.

Muscle/

Muscle training. This took the form of active assisted exercises, the movements for each muscle being similar to those used for testing its function. They were carried out either on a polished surface or in a swimming pool of graduated depth and fitted with various slings to support the patient in any desired position.

The child is asked to carry out the exercise e.g. to move the leg into abduction. The masseuse grasps the heel and gauges the amount of assistance, if any, required to carry out the full range of movement. All exercises are thus carried out over the full range and the child is never left with a sense of failure and normal joint and muscle sense is retained.

In favourable cases the amount of assistance required decreases until first none is necessary and next the child is doing exercises against resistance.

The advantages of the bath are manifold. The effects of gravity and friction are diminished to the best extent and the child has a greater sense of accomplishment. The range of activity is greater than in table exercises. Walking can be carried out earlier as the weight-bearing on weakened muscles is diminished and balance is learned more easily.

Criticism has been levelled at the swimming bath as tending to frighten children, but this was not found to be so; perhaps because the masseuse entered the water clad/

clad in fishing waders, and was with the child all the time until confidence is established.

Care must be taken never to allow weak muscles to overstretch. The effect of this was demonstrated accidentally in one or two cases. In one, a baby with a deltoid paralysis was in bed with restrainers on and the arm held in abduction by a bandage tied to the top of the bed. This became loose and the child spent over half an hour with the arm hanging by the side. On muscle testing the power of the deltoid was found to have diminished markedly, although it recovered on again being relaxed and finally returned completely to normal.

"Trick" movements must also be guarded against. Children may learn to use other muscles to avoid carrying out the exercise of the weak ones. While this is to the good if the muscles are completely gone, it should not be allowed to interfere with the exercise of recovering muscles. Joints above and below the joint involved in the exercise are therefore held so that only the desired muscle can carry out the movement.

After each of the two-monthly muscle tests the splintage was checked over to ensure that any muscles which were lagging behind were efficiently relaxed.

Electrical treatment was little used and then only in the late stages. It was then used in the shape of faradism/

faradism applied to one muscle in a group that appeared to be lagging behind its neighbours. It was very difficult to estimate whether any improvement ever followed attributable to its use.

Weight-bearing. Cases with marked trunk muscle involvement were kept recumbent with no weight bearing, except in the pool, for eighteen months to allow as much recovery as possible and to avoid scoliosis.

Cases with leg involvement were not allowed weight-bearing without support until some six months had elapsed without further improvement, or until all muscles had improved to stage 4. Some form of walking iron was fitted, with stops to prevent the stretching of weaker muscles. Weight-bearing at first is followed by frequent muscle tests to ensure that progress is maintained. If loss of power occurred recumbency and splintage were resumed.

In cases where there was permanent weakness of the spinal muscles leather corsets moulded to the body were used for support. The fit is assured by having them moulded on to a plaster cast of the body. Where hip muscles were also involved a leg splint was fixed to the leather corset. In this way a child with almost complete paralysis below the waist was enabled to walk with the aid of crutches.

Late cases. Many cases admitted even a short time after the acute phase had been allowed to develop contractures/

contractures and deformities. In these cases the first stage in treatment was necessarily the correction of these faults. Many were capable of correction by repeated gentle manual correction but others required stronger measures. Some were dealt with by putting up in plaster in the faulty position and cutting a wedge in the plaster in such a way that the opening out of the wedge resulted in the correction of the deformity. The opening out of the plaster was then gradually carried out by successively larger wedges. This gave a gradual correction of the deformity with little reaction. Other cases were dealt with by a single manipulation under anaesthesia where it appeared that the contracture was due to a single tight band. In more severe cases tenotomy or open lengthening of the tendons was necessary.

In the late stages of all groups recourse was had to operation where this would improve function. The commonest operations performed were:-

(a) Stabilisation of the foot by tarsal arthrodesis with or without tendon transplants to replace the so often paralysed tibialis anterior.
(b) Those designed to secure opposition of the thumb.
(c) Where good elbow and hand movements were present with a deltoid paralysis an arthrodesis of the shoulder was performed.

None of these operations were carried out until two years/

years after the acute phase, and until a sufficient period of adequate treatment had been carried out.

A resume of treatment would not be complete without reference to what may be called the Kenny method of treatment.

An Australian nurse, Sister Kenny, sprang into prominence about 1930 with a condemnation of orthodox treatment and a number of popular "cures".

She described her treatment of poliomyelitis in her book[51]. From reading it one gathers that she had little knowledge of anatomy and less of physiology.

She condemns outright any splintage of paralysed limbs. Both in Australia and in this country she received an enthusiastic "write-up" in the popular press. In Australia for or against Kenny became, one gathers, a political "plank".

Finally a medical committee was appointed in 1935 and reported on a series of cases under treatment by her.

They reported[52 and 53] that she appeared to have little knowledge of what she was up against in treating numbers of cases of poliomyelitis in a recent stage; that her prognosis at first was fanciful, but later became cautious and took up more and more orthodox treatment; that patients had not improved either more quickly or more extensively than would have been expected by orthodox methods.

She arrived in this country and similar facilities were/

were given to her to treat patients in L.C.C. Hospitals under observation of a medical committee who remained unimpressed.

COMPLICATIONS.

Respiratory failure occurred in two cases, renal calculus in three and a possible fourth, and three children had periodic convulsive attacks.

Respiratory Failure.

Paralysis of the respiratory muscles occurred in cases 45 and 156 which, as can be seen from the charts, were extensively paralysed and had a very poor recovery at the end of six months. Both were treated in the "Drinker" apparatus and very probably owe their lives to it. The chances of either child walking again or even being able to do handcrafts are minimal. The overwhelming majority of cases which require the apparatus are paralysed to the same degree[47].

Sufficient experience over a large number of cases is lacking but doubts have been expressed whether it is justifiable to prolong a child's existence where almost complete permanent quadriplegia is probable.

The reports in the literature to date will be summarised.

Wilson[54 55] has divided these cases into three types - where respiratory failure may be caused.

1./

Bulbar type.
1. Directly by knocking out muscles of respiration.
2. Directly by involvement of the medullary centres.
3. Indirectly - pharangeal paralysis with a collection of mucus in the respiratory passages.

Of 23 cases of the first type three died of pneumonia, two almost immediately and one a month later.

Of 20 cases of the second type 13 died.

There is no note of the residual paralysis.

Crome[56] came to the conclusion that the respirator was of no use in bulbar types of paralysis. Of the nine spinal cases with respiratory paralysis -

5 died.

2 after two years are confined to bed.

1 after one year has complete quadriplegia.

1 after one year may walk with apparatus.

Of 10 bulbar cases all died, of 5 mixed cases three died, and the survivors are completely paralysed.

Another note by Brahdy and Lenarski[57] dealing with 46 cases. 18 left hospital alive, 2 of whom died from late pneumonia at home. 12 bulbar cases all died leaving 34 cases of spinal paralysis of whom 16 died in hospital. There is no note of residual paralysis.

Kramer[58] writes of 10 patients who required treatment/

treatment in the respirator, 8 of whom died. The remainder were left with unspecified paralysis.

It may thus be stated that patients who require the respirator have a very bad prognosis as regards life and it is overwhelmingly probable that they will have a very severe residual paralysis.

Other points about the respirator to be gleaned from the quoted literature are -

1. Patients under 10 years of age should be started off with a negative pressure of 10 cms water rather than the originally recommended 15 cms. and this should be increased by 1 cm. per day until the most comfortable tension is reached. This is rarely more than 15 cm.
2. The respiratory rate should be set at the normal for the age of the patient.
3. Occasionally patients resist the action of the respirator. This is best treated by small doses of morphia.

Pharyngeal paralysis.

1. Avoid vomiting by keeping stomach empty during period and until hunger returns.
2. Postural drainage.
3. Aspiration of the throat.
4. Parenteral fluids.
5. Occasionally tracheotomy.

Atropine/

Atropine was said to be disappointing as it produced a tenacious sputum which was even more difficult to get rid of.

All writers emphasise the occurrence of immediate and late respiratory infections in respirator cases. The two cases in this series were no exception. The cause seemed to be inability to bring up sputum, a very slight bronchitis, and then copious bronchial secretion which water-logged the lungs.

Both cases were treated successfully with very full doses of atropine which was then repeated if the train of symptoms seemed about to recommence.

Renal colic.

The three cases in which this occurred had been recumbent over a period of twelve to eighteen months. In one case radiographic evidence of calculus was present.

A profuse bibliography on the subject is given by Pirah and Foweather[59] who summarise the causation as follows:-

Calcium is released from the bones as a result of immobilisation, and is largely excreted in the urine.
The urine is concentrated as a result of insolation and possibly too low a fluid intake.
Stasis and inadequate renal drainage result from the recumbent position.

The/

The amount of the calcium intake, a lack of vitamin A and an excess of vitamin D may all play a part. Infection may reach the urinary tract from the bowel following constipation due to recumbency; or may arise as an ascending infection in females in plaster spicas.

A regime was instituted along the lines they suggest with good results.

Fluid such as barley water.

Tilting or turning recumbent patients every two or three days.

Vitamin A preparations.

Avoidance of constipation.

Prophylactic examination of the urine every month.

The recent work of Helfet[60] may prove to be of value in counteracting this tendency to calculus formation. Working with bone dystrophies he avoids the formation of calcium phosphate by giving alum acetate by mouth to precipitate phosphorus in the alimentary canal. Excess calcium is restored to the bones instead of being excreted as Ca P.

Convulsive attacks.

These occurred in patients one to three years after the acute attack. They were of very short duration. They occurred in children between the ages of eight and twelve. Physical examination was negative. There was no history of fits occurring before the acute/

acute attack of poliomyelitis.

They resembled a mild epileptic fit which of course they possibly were.

There is no reference to this occurrence in the literature.

PROGNOSIS.

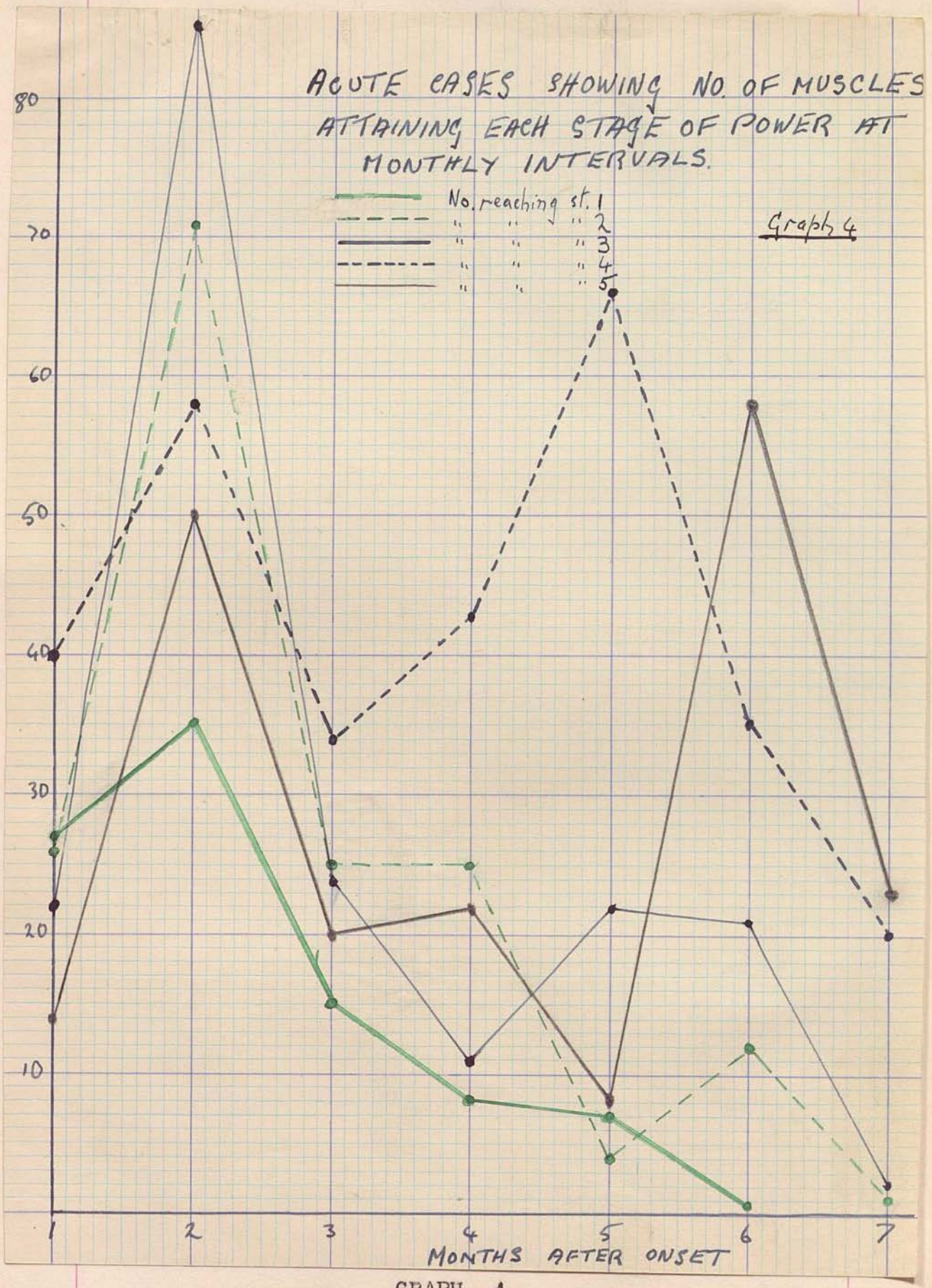
Mortality.

There were no deaths in the series reported. In this the age incidence may have played a part. It is frequently noted[4, 11,] that the younger the age of the patient the greater the chance of survival.

In Wickman's series[4] the case mortality was 11.9% for children under 11 years of age as compared with 27.6% for persons between 12 and 32 years. Davison[11] in a resume found the case mortality to vary between 0% and 78% and to be lowest in the age period 1-7 years. Jones and Lovett in a standard textbook[24] probably put the limits too low at 10-15%.

McDonald[29] found that the fatal cases could be divided into two groups. The first was one characterised by overwhelming toxaemia and a low cell count in the cerebro-spinal fluid; and the second was the ascending Landre type in which the cell count was very high. He also found that the older children were more seriously crippled than the younger. This is borne out in this series where all the cases of quadriplegia were in the 10 - 14 age group which was the smallest group in the series.

While discussing prognosis it is pertinent to recall that when the disease occurs in epidemic form the number of cases which actually become paralysed is usually much less than 50% and may be as low as 10% of those/


ACUTE CASES SHOWING NO. OF MUSCLES ATTAINING EACH STAGE OF POWER AT MONTHLY INTERVALS.
No. reaching st. 1
" " " 2
" " " 3
" " " 4
" " " 5
Graph 4
80
70
60
50
40
30
20
10
1
2
3
4
5
6
7
MONTHS AFTER ONSET

GRAPH 4.

those becoming infected. It follows that even with a patient showing definite preparalytic symptoms and findings there is still an even or better chance of him or her not developing any paralysis.

Function.

The grading of muscle power has already been described. The grades may be recapitulated as follows:-

0:- No contraction felt in the muscle.

1:- The muscle can be felt to tighten but no movement is produced.

2:- The muscle produces movement of the part with gravity eliminated.

3:- The muscle can raise the part against gravity.

4:- The muscle can raise the part against gravity and outside resistance.

5:- "Normal".

The preparation of muscle charts was described. In an appendix are forty-two of these charts. Eighteen refer to cases seen in the acute stage. Seventeen refer to cases seen three months after the onset, and seven to cases seen more than one year after onset. From the first thirty-five charts graphs 4, 5, 6, 7 and 8 have been prepared.

Graph 4. This is made up from the muscle charts of eighteen acute cases involving 1199 muscles, and shows the number of muscles reaching each stage of recovery over a seven month period under treatment.

The/

The number of muscles reaching grade "1" is seen to be maximal in the second month and then to decrease.

The number of muscles reaching grades "2" and "3" reaches a maximum in the second month and falls off to rise to a lower peak in the 5th and 6th month.

The number of muscles reaching grades "4" and "5" also shows a peak in the second month but rises to a higher peak in the 5th and 6th months.

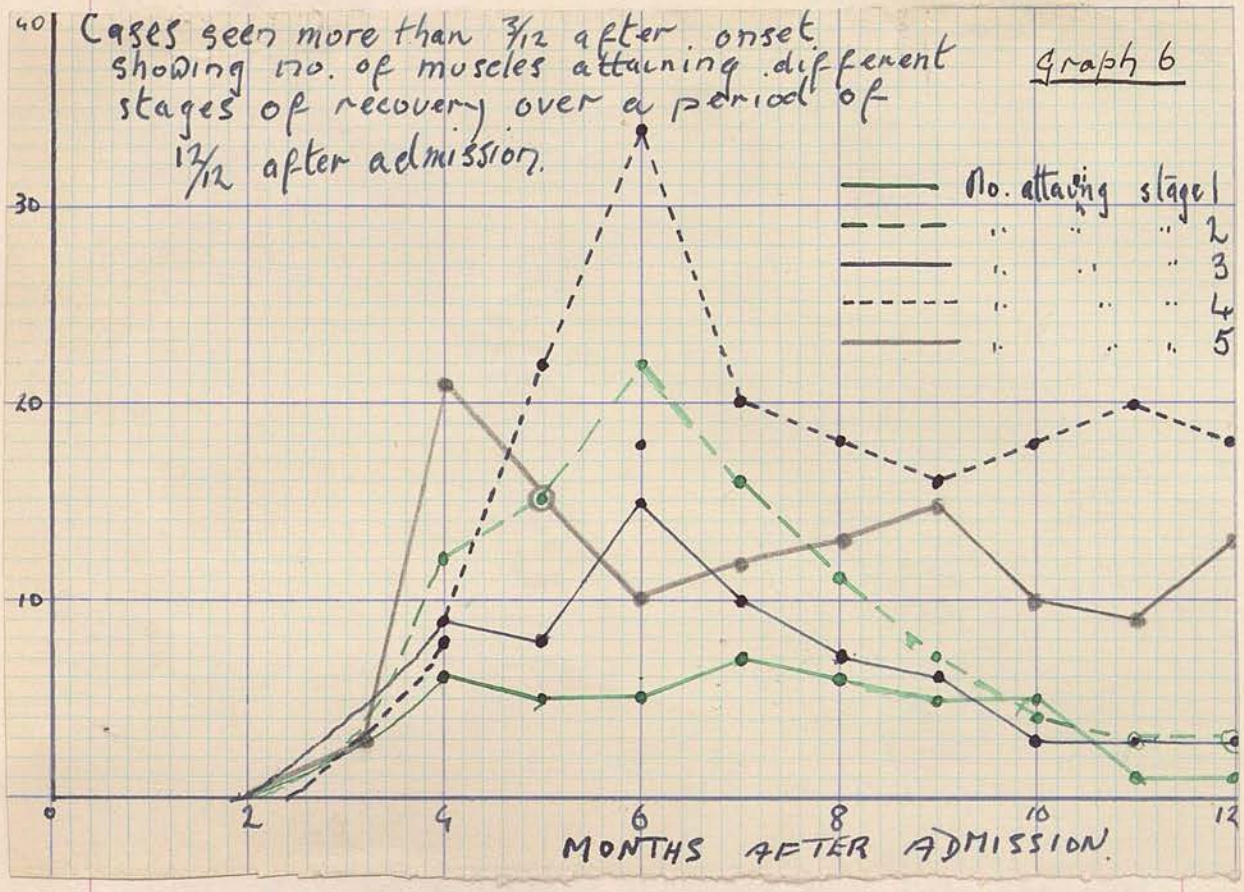
The first great recovery peak in all grades is too early to be the result of treatment and must represent the natural recovery which takes place as the oedema in the spinal cord subsides and the anterior horn cells which have not died take up function again. It is of interest that this recovery of muscle function, under optimum conditions, occurs in a sharply defined time space.

The second peak represents the effect of treatment re-educating muscles, and effecting a hypertrophy of such muscle fibres as have undamaged anterior horn cells to compensate for the number of muscle fibres no longer existent. In this way the rise to the higher grades of muscle power at this stage is explicable.

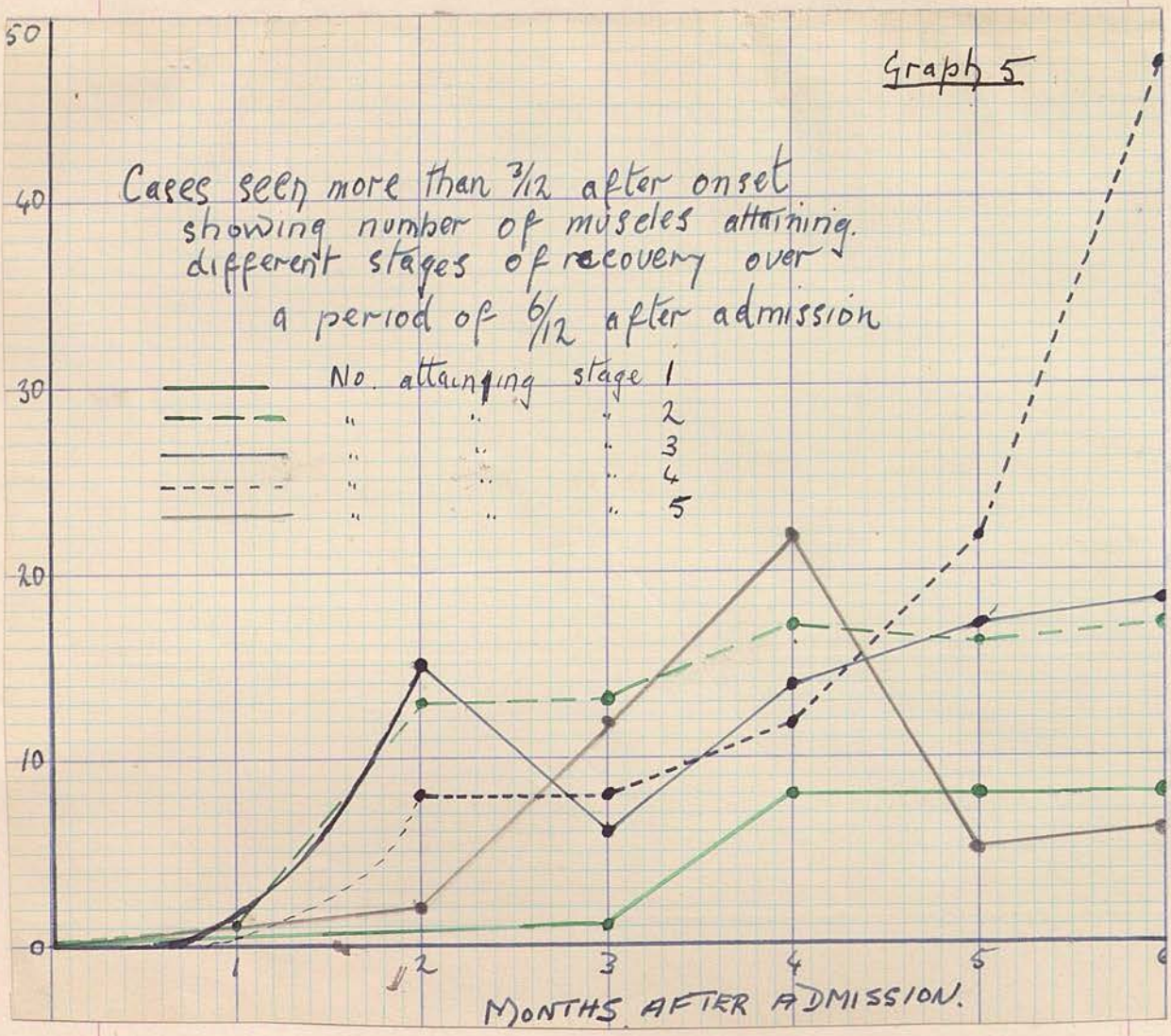
From the same charts the following results can be shown.

Of 198 muscles graded "0" at the inception of treatment 106 remained "0" after 7 months.

Of/


Cases seen more than 3/12 after onset showing no. of muscles attaining different stages of recovery over a period of 12/12 after admission.
Graph 6
No. attaining stage 1
2
3
4
5
40
30
20
10
0
2
4
6
8
10
12
MONTHS AFTER ADMISSION.

GRAPH 6.


Graph 5
Cases seen more than 3/12 after onset showing number of muscles attaining different stages of recovery over a period of 6/12 after admission
No. attaining stage 1
" " " 2
" " " 3
" " " 4
" " " 5
50
40
30
20
10
0
1
2
3
4
5
6
MONTHS AFTER ADMISSION.

GRAPH 5.

Of 198 muscles graded "1" at the inception of treatment 44 remained "1".

Of 177 muscles graded "2" at the inception of treatment 48 remained "2".

Of 222 muscles graded "3" at the inception of treatment 57 remained so at the end.

Out of the 1199 muscles involved 292 failed to attain grade "3" at the end of the seven month period; and of these 292 two cases were responsible for 177 failures. These were Cases Nos. 45 and 156, aged 10 and 12 years respectively. Both had had respiratory embarrassment sufficient to require the use of the respirator over a period of weeks.

These figures may be expressed as the following percentages. At the end of seven months:-

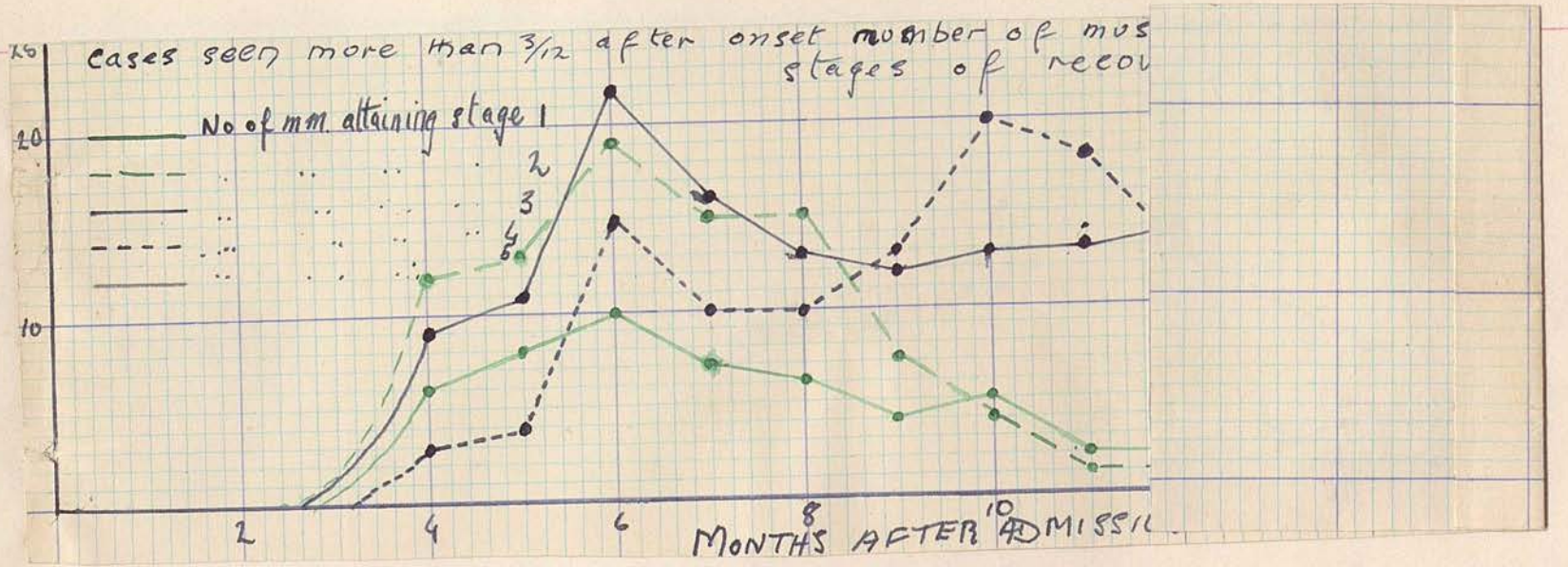
53% of muscles originally graded "0" remained so.
22% " " " " "1" " "
26% " " " " "2" " "
25% " " " " "3" " "

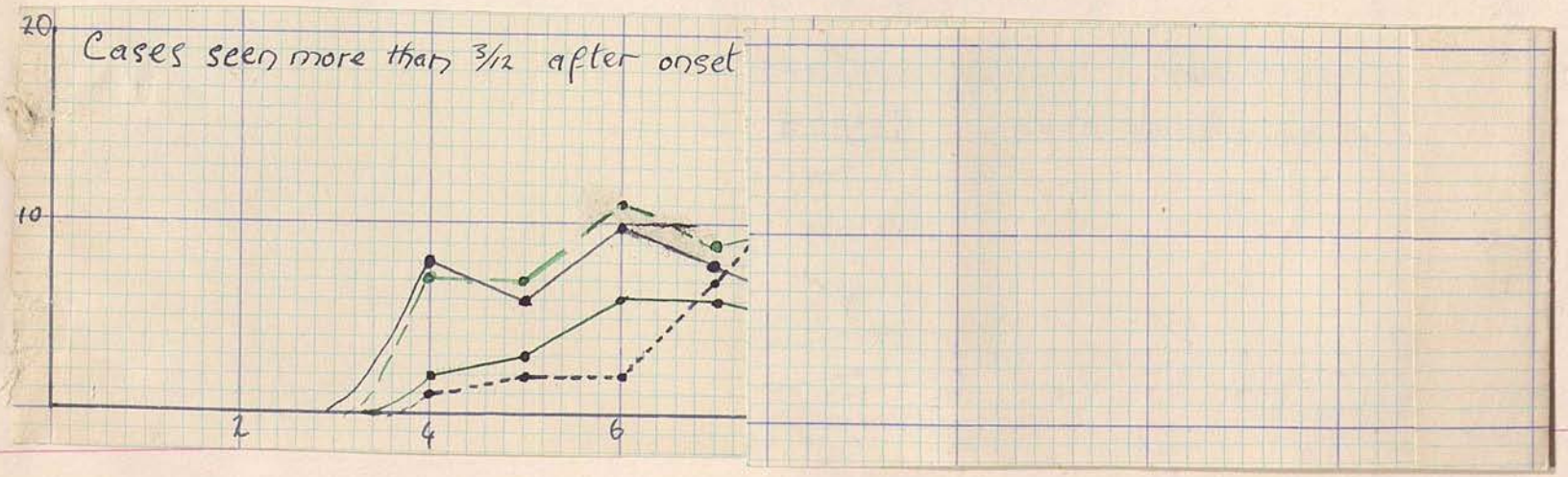
24% of all muscles involved remained under "3".

Graphs 5, 6, 7 and 8. These are made up from the muscle charts of seventeen cases seen three months after the onset of the disease showing the recovery over six months, twelve* months, eighteen months, and two years.

826/

* The outbreak of hostilities is responsible for this presentation by preventing the follow up of cases for a uniform period.

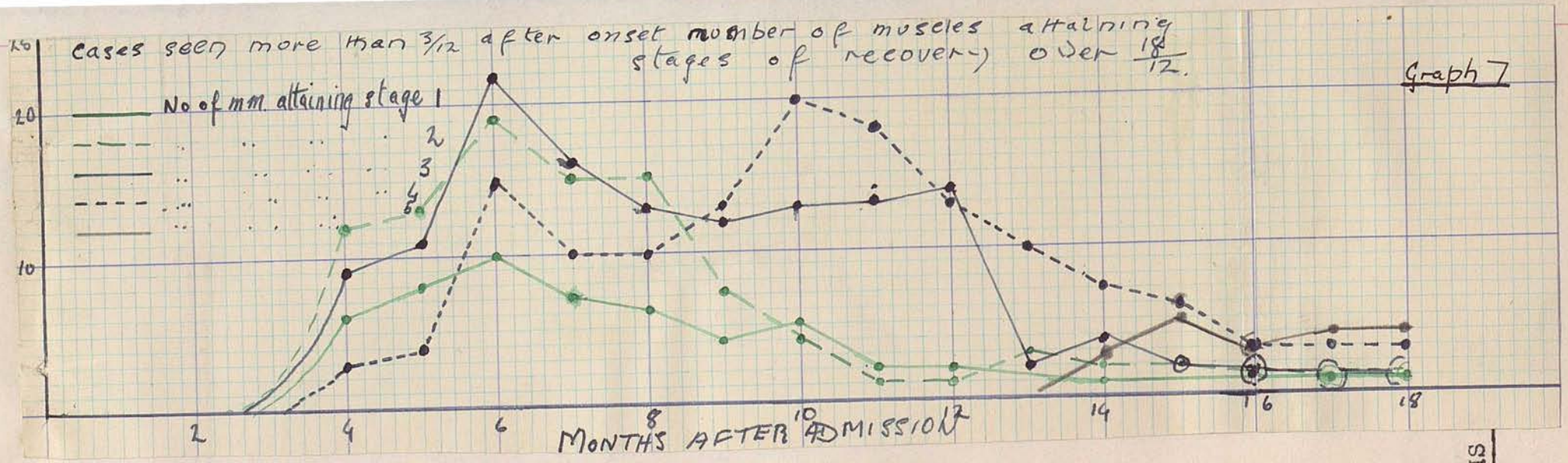

Cases seen more than 3/12 after onset number of mus
stages of recov
No of mm. attaining stage 1
2
3
4
5
30
20
10
2
4
6
8
10
MONTHS AFTER ADMISSI


20
Cases seen more than 3/12 after onset
10
2
4
6

GRAPHS 7 & 8.

Cases seen more than 3/12 after onset number of muscles attaining stages of recovery) over $\frac{18}{12}$.

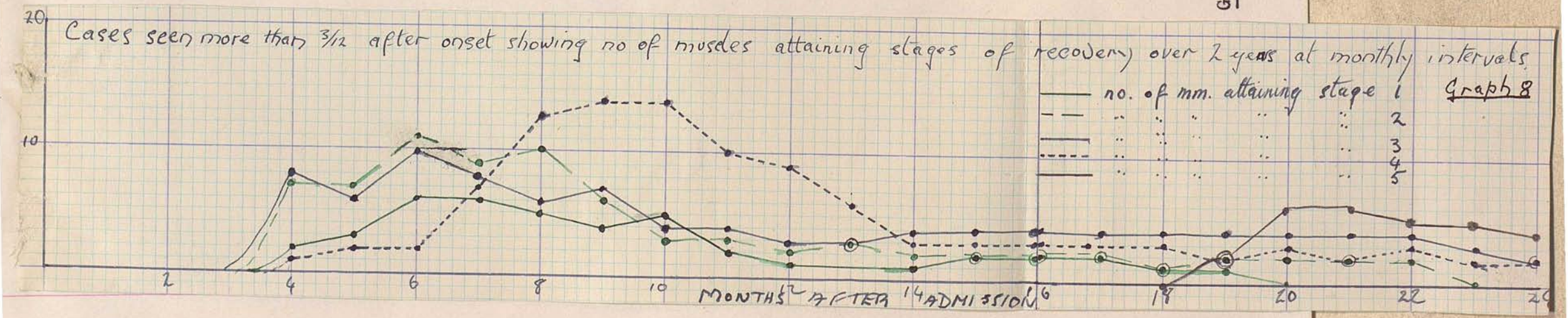
Graph 7



GRAPHS

Cases seen more than 3/12 after onset showing no of muscles attaining stages of recovery over 2 years at monthly intervals.

Graph 8



826 muscles were involved.

Muscles attaining grade "1"

The number attains the maximum about six months after the beginning of treatment, and after one year there is little improvement from grade "0" to grade "1".

Muscles attaining grade "2".

The number attains the maximum about the same time and there is the same lack of improvement from grade "1" to grade "2" after one year.

Muscles attaining grade "3".

The number attains a maximum at the same time but a large number of muscles continue to attain this grade up to the end of the year and some up to the end of two years.

Muscles attaining group "4"

This graph shows a peak at the six month period but a higher one at the ten month period; and at the end of the two year period muscles are still attaining this grade.

Muscles attaining group "5"

These naturally appear late in the graph and improvement is still occurring at the end of two years.

Comparative percentages of muscles remaining in their/

their original grade can be worked out:-

At the end of two years:-

41% of muscles originally graded "0" remained so.
10% " " " " "1" " "
nil " " " " "2" " "
nil " " " " "3" " "

30% of all muscles involved remained under grade "3" at the end of two years.

The muscle charts of cases admitted over one year after the acute phase of the disease illustrate how improvement may be expected under treatment even after this time lapse. Case No. 126 shows improvement 4 years after the disease, even muscles graded "0" on admission recovering some power -- although a perusal of the other charts in this category shows that muscles graded "0" on admission are unlikely to improve whereas muscles graded higher than this are likely to improve.

PROGNOSIS WITH REGARD TO FUNCTION.

Certain general rules applicable to individual cases can be formulated from the above records; but it must be emphasised that it is very difficult to give an accurate prognosis in any given case.

As the sensitive stage passes off there are certain indications. Muscles graded "0" have an even chance of remaining so at the end of six months and the majority of those so left will remain "0" at the end of two years.

Muscles graded "1", "2", or "3" are most likely to improve markedly in six months and may continue to improve over two years. Most, however, of the recovery will have taken place at the end of the first year.

If muscles have not progressed from "0" at the end of two months their chances become progressively less from that date.

A review of the prognosis of any case should be made at the six month period and muscles not reaching grades "1" or "2" written "down".

Muscles graded "3" at the six monthly review will probably recover almost completely.

Certain other findings may influence the prognosis. It was found that the early onset of cyanosis in a paralysed limb was of bad prognostic significance. Cyanosis was noted in 23 out of 159 cases. Of the same/

same import was a high proportion of "0" muscles in a limb, especially in older patients, and a few patients in this category were responsible for a high fraction of the residual paralysis.

Certain muscles were found to have bad individual reputations or persistent paralysis in spite of treatment. These were tibialis anterior, the abductors of the hip, and the small muscles of the hand. It is noteworthy that these are the muscles which are most likely to miss relaxation in the early stages or to be difficult to immobilise in a relaxed position.

Discussion of prognosis with regard to function does not fill much space in the literature.

Jones and Lovett[24] mention as unfavourable signs: (1) a slow attack with exacerbations and involvement of new muscles lasting over several days. (2) Excessive and persistent muscle tenderness lasting over many weeks under proper treatment. Neither of these were observed but their statement that "a scattered paralysis on the whole has a more favourable prognosis than a complete loss of power below a certain level" held good.

There is little statistical note of muscle recovery; but Harry[61] published, in 1938, findings which are similar to these, pointing out that while most writers say that the spontaneous recovery period is from two to four years after the acute disease, the muscle re-

education/

re-education period is shorter and continues for eighteen months after the onset; although in most cases there is little improvement after twelve months.

A question which can be answered under this heading is the likelihood of other children in a family developing the disease when one is affected. It is most unlikely there will be further cases in the household. In this series only two cases out of 159 were family contacts. Davison[11] quotes 622 cases where only eight had a history of contact, and 2070 contacts of whom only 14 contracted the disease.

Another question which one is always asked by relatives is whether the patient will be able to walk again. This is usually impossible to answer for the first months in widely paralysed cases; but it was usually found that a child with 100% use of one limb, arm or legg, could be fitted with some form of apparatus enabling him to walk.

From the muscle charts of the "late" cases two clinical rules can be formulated. The first is that until all the muscles of a limb have recovered to normal an adequate support should be ordered while weight-bearing, no matter how long this may be. In this way one will avoid regression in weak muscles and ensure that muscles which may be late in recovering are given a chance under optimum conditions. The second is that no/

no operative measure to stabilise or arthrodese joints without a genuine therapeutic trial no matter what period may have elapsed since the disease.

SUMMARY.

A historical sketch of poliomyelitis is given.

The clinical manifestations, treatment and results in cases of poliomyelitis are described.

The results of cases reported to have been treated by serum are analysed and the conclusion reached that serum is of no value in the treatment of the disease.

There is no known method of successful prophylaxis.

80% of the adult population are immune to the disease.

Subclinical attacks are common. The tracing of case to case infection is rare.

The necessity for early splintage and movement is emphasised.

Children who are so severely paralysed as to require the use of a respirator have a very bad prognosis as to life and also as to function.

The grading of muscle power is described and charts submitted showing the progress of cases in the acute stage, three months after the acute stage, and of cases admitted years after the acute stage.

The chances of individual muscles recovering are given and the importance of muscle charts in assessing prognosis is shown.

Most/

Most of the recovery takes place in the first year under efficient treatment.

Recovery may take place under treatment in cases hitherto untreated after many years.

Complications are described.

A bibliography is appended.

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MUSCLE CHARTS.

1. ACUTE CASES.

JOAN WALDIE 45

LEFT LEG 4/IV/39	24/XII/38	24/XI/38	24/IX/38	DATE	RIGHT LEG 24/IX/38	24/XI/38	24/XII/38	4/IV/39
				MUSCLE POWER				
				Orbit				
				Facial				
				Mouth				
				Anterior Neck				
				Posterior Neck				
X	2	2	1	Back		1	2	2 X
				Respiration	R. dome paralysed.			
	2	2	2	Quadratus Lumborum		2	2	2
4	4	4	4	Anterior Abdominals	4	4	4	4
	2	2		Lateral Abdominals			2	2
				———				
0	0	0	0	Gluteus Maximus	0	0	0	0
0	0	0	0	Hip Flexors	0	0	0	0
0	0	0	0	Sartorius	0	0	0	0
0	0	0	0	Inward Rotation	0	0	0	0
0	0	0	0	Outward Rotation	0	0	0	0
0	0	0	0	Tensor Fasciæ Latæ	0	0	0	0
0	0	0	0	Hip Abductors	0	0	0	0
0	0	0	0	Hip Abductors	0	0	0	0
0	0	0	0	Quadriceps	0	0	0	0
0	0	0	0	Inner Hamstrings	0	0	0	0
0	0	0	0	Biceps	0	0	0	0
0	0	0	0	Gastrocnemius	0	0	1	1
0	0	0	0	Anterior Tibial	0	0	0	0
1	0	0	0	Posterior Tibial	0	0	1	1
0	0	0	0	Peroneals	0	0	0	0
1	0	0	0	Extensor Long. Digitorum	1	1	1	1
0	0	0	0	Extensor Prop. Hallucis	1	1	1	1
0	0	0	0	Flexor Long. Digitorum	1	3	3	3
0	0	0	0	Short Toe Flexors	0	0	0	0
0	0	0	0	Flexor Long. Hallucis	0	0	0	0
				———				
				LENGTH OF LIMB:				
				Ant. Sup. Spine to Int. Mall.				
				Knee to Mallcolus				
				———				

LEFT ARM				DATE	RIGHT ARM			
				MUSCLE POWER				
2	2			Anterior Deltoid			2	2
3	2	2		Posterior Deltoid		2+	2+	2+
2	2	2	2	Upper Trapezius	2	2	2	2
3	3	3	3	Mid. Trapezius	3	3	3	3
3	3	3	3	Low. Trapezius	3	3	3	3
2	2			Serratus Magnus			2	2
3	1			Rhomboids			1	2
2	2	2		Latissimus Dorsi		3	3	3
2	3	2		Pect. Major		2+	2+	2+
2+	2	2		Outward Rotators		3	3	3
3	3	3	1	Biceps	3	3+	4	4
1	1	1	0	Triceps	2	2	3	3+
2	2	2	3	Supinator	3	3	3	3
3	3	3	3	Pronators	3	4	4	4
2	2	2	0	Flexor Carpi Rad.	0	3	3	3+
3	3	3	0	Flexor Carpi Uln.	1	2	2	3
2	2	2	0	Extensor Carpi Rad.	1	3	3	3+
2	2	2	0	Extensor Carpi Uln.	1	3	3	3+
3	3	3	3	Flex. Prof. Digit	4	4	4	4
3	3	3	3	Flex. Sub. Digit	4	4	4	4
2+	2+	2	2	Finger Ext.	1	3	3	3
				Lumbricales				
2	2	2	2	Dors. Inteross.	2	3	3	4
2	2	2	2	Abd. Min. Digit	2	3	3	4
3	3	2	2	Palm. Inteross.	2	3	3	4
				———				
3	3	3	3	Flex. Long. Poll.	3	4	4	4
				Flex. Brev. Poll.				
3+	3	3	3	Ext. Long Poll.	2	3	3	3
				Ext. Brev. Poll.				
1	1	1	2	Abd. Poll. Longus	2	1	1	2
				Abd. Poll. Brev.				
3	3	3	2	Add. Poll.	3	4	4	4
1	1	1	0	Opponens Pollicis	4	4	4	4
				———				

R. DICKINSON 115.

LEFT LEG	DATE	RIGHT LEG
	MUSCLE POWER	
	Orbit	
	Facial	
	Mouth	
	Anterior Neck	
	Posterior Neck	
	Back	
	Respiration	
	Quadratus Lumborum	
	Anterior Abdominals	
	Lateral Abdominals	
	———	
	Gluteus Maximus	
	Hip Flexors	
	Sartorius	
	Inward Rotation	
	Outward Rotation	
	Tensor Fasciæ Latæ	
	Hip Abductors	
	Hip Abductors	
	Quadriceps	
	Inner Hamstrings	
	Biceps	
	Gastrocnemius	
	Anterior Tibial	
	Posterior Tibial	
	Peroneals	
	Extensor Long. Digitorum	
	Extensor Prop. Hallucis	
	Flexor Long. Digitorum	
	Short Toe Flexors	
	Flexor Long. Hallucis	
	———	
	LENGTH OF LIMB:	
	Ant. Sup. Spine to Int. Mall.	
	Knee to Mallcolus	
	———	

LEFT ARM 19/V/39 3/11/39 3/XI/39 6/I/39 2/XII/38 3/XI/38	DATE	RIGHT ARM
	MUSCLE POWER	
4 3 3 2 2 2	Anterior Deltoid	
4 3 3 3 3 3	Posterior Deltoid	
	Upper Trapezius	
	Mid. Trapezius	
	Low. Trapezius	
	Serratus Magnus	
	Rhomboids	
	Latissimus Dorsi	
4 4 4 4 4 4	Pect. Major	
4 4 4 4 4 4	Outward Rotators	
4 4 4 4 4 4	Biceps	
4 4 4 4 4 4	Triceps	
4 4 4 4 4 4	Supinator	
4 4 4 4 4 4	Pronators	
4 4 4 4 4 4	Flexor Carpi Rad.	
4 4 4 4 4 4	Flexor Carpi Uln.	
4 4 4 4 4 4	Extensor Carpi Rad.	
4 4 4 4 4 4	Extensor Carpi Uln.	
4 4 4 4 4 4	Flex. Prof. Digit	
4 4 4 4 4 4	Flex. Sub. Digit	
4 4 4 4 4 4	Finger Ext.	
4 4 4 4 4 4	Lumbricales	
4 4 4 4 4 4	Dors. Inteross.	
4 4 4 4 4 4	Abd. Min. Digit	
4 4 4 4 4 4	Palm. Inteross.	
	———	
4 4 4 4 4 4	Flex. Long. Poll.	
4 4 4 4 4 4	Flex. Brev. Poll.	
4 4 4 4 4 4	Ext. Long Poll.	
4 4 4 4 4 4	Ext. Brev. Poll.	
4 4 4 4 4 4	Abd. Poll. Longus	
4 4 4 4 4 4	Abd. Poll. Brev.	
4 4 4 4 4 4	Add. Poll.	
4 4 4 4 4 3	Opponens Pollicis	
	———	

STODART. 116.

LEFT LEG 12/5/39	12/4/39	12/3/39	12/2/39	12/1/39	DATE	RIGHT LEG
					MUSCLE POWER	NORMAL.
					Orbit	
					Facial	
					Mouth	
					Anterior Neck	
					Posterior Neck	
4	4	4	3+	3	Back	
					Respiration	
4	4	4	3+	3	Quadratus Lumborum	
4	4	4	3	3	Anterior Abdominals	
4	4	4	3	3	Lateral Abdominals	
					———	
4	4	4	3+	3	Gluteus Maximus	
5	4	4	4	3	Hip Flexors	
5	4	4	4	3	Sartorius	
5	4	4	4	3	Inward Rotation	
5	4	4	4	3	Outward Rotation	
4	4	4	3+	3	Tensor Fasciæ Latæ	
4	4	4	3+	3	Hip Abductors	
5	4	4	3+	3	Hip Adductors	
4	4	4	3+	3	Quadriceps	
4	4	4	4	4	Inner Hamstrings	
4	4	4	4	4	Biceps	
5	4	4	4	4	Gastrocnemius	
5	5	5	5	5	Anterior Tibial	
5	4	4	4	4	Posterior Tibial	
5	4	4	4	4	Peroneals	
5	4	4	4	4	Extensor Long. Digitorum	
5	5	5	5	5	Extensor Prop. Hallucis	
5	4	4	4	4	Flexor Long. Digitorum	
5	4	4	4	4	Short Toe Flexors	
5	4	4	4	4	Flexor Long. Hallucis	
					———	
					LENGTH OF LIMB:	
					Ant. Sup. Spine to Int. Mall.	
					Knee to Mallcolus	
					———	

LEFT ARM	DATE	RIGHT ARM
	MUSCLE POWER	
	Anterior Deltoid	
	Posterior Deltoid	
	Upper Trapezius	
	Mid. Trapezius	
	Low. Trapezius	
	Serratus Magnus	
	Rhomboids	
	Latissimus Dorsi	
	Pect. Major	
	Outward Rotators	
	Biceps	
	Triceps	
	Supinator	
	Pronators	
	Flexor Carpi Rad.	
	Flexor Carpi Uln.	
	Extensor Carpi Rad.	
	Extensor Carpi Uln.	
	Flex. Prof. Digit	
	Flex. Sub. Digit	
	Finger Ext.	
	Lumbricales	
	Dors. Inteross.	
	Abd. Min. Digit	
	Palm. Inteross.	
	———	
	Flex. Long. Poll.	
	Flex. Brev. Poll.	
	Ext. Long Poll.	
	Ext. Brev. Poll.	
	Abd. Poll. Longus	
	Abd. Poll. Brev.	
	Add. Poll.	
	Opponens Pollicis	
	———	

A. YORKSTON 118.

LEFT LEG 11/4/39	15/2/39	11/1/39	20/12/38	21/11/38	20/10/38	DATE	RIGHT LEG 20/10/38	11/11/38	12/12/38	15/1/39	15/2/39	11/4/39
						MUSCLE POWER						
						Orbit						
						Facial						
						Mouth						
						Anterior Neck						
						Posterior Neck						
5	5	5	5	5	5	Back	5	5	5	5	5	5
						Respiration						
5	5	5	5	5	5	Quadratus Lumborum	5	5	5	5	5	5
5	5	5	5	5	5	Anterior Abdominals	5	5	5	5	5	5
5	5	5	5	5	5	Lateral Abdominals	5	5	5	5	5	5
						———						
5	5	5	4	3	3	Gluteus Maximus	3	3	3	3	3	3+
5	5	5	5	5	5	Hip Flexors	4	4	4	4	4	4
5	5	5	5	5	5	Sartorius	4	4	4	4	4	4
5	5	5	4	4	4	Inward Rotation	4	4	4	4	4	4
5	5	5	4	4	4	Outward Rotation	4	4	4	4	4	4
5	5	5	4	3	3	Tensor Fasciæ Latæ	2	2	4	4	4	4
5	5	5	4	3	3	Hip Abductors	2	2	4	4	4	4
5	5	5	4	4	4	Hip Abductors	4	4	4	4	4	4
5	5	5	5	5	5	Quadriceps	3	3	3	3	3	4
5	5	5	5	5	5	Inner Hamstrings	3	3	3	3	3	4
5	5	5	5	5	5	Biceps	3	3	3	3	3	4
5	5	5	5	5	4	Gastrocnemius	3	5	5	5	5	5
5	5	5	5	5	4	Anterior Tibial	3	4	4	4	4	5
5	5	5	5	5	4	Posterior Tibial	3	4	4	4	4	5
5	5	5	5	5	4	Peroneals	3	4	4	4	4	5
5	5	5	5	4	4	Extensor Long. Digitorum	3	4	4	4	5	5
5	5	5	5	5	5	Extensor Prop. Hallucis	4	5	5	5	5	5
5	5	5	5	5	5	Flexor Long. Digitorum	4	4	4	4	5	5
5	5	5	5	5	5	Short Toe Flexors	4	4	4	4	5	5
5	5	5	5	5	5	Flexor Long. Hallucis	4	4	4	4	5	5
						———						
						LENGTH OF LIMB:						
						Ant. Sup. Spine to Int. Mall.						
						Knee to Mallcolus						
						———						

LEFT ARM	DATE	RIGHT ARM
	MUSCLE POWER	
	Anterior Deltoid	
	Posterior Deltoid	
	Upper Trapezius	
	Mid. Trapezius	
	Low. Trapezius	
	Serratus Magnus	
	Rhomboids	
	Latissimus Dorsi	
	Pect. Major	
	Outward Rotators	
	Biceps	
	Triceps	
	Supinator	
	Pronators	
	Flexor Carpi Rad.	
	Flexor Carpi Uln.	
	Extensor Carpi Rad.	
	Extensor Carpi Uln.	
	Flex. Prof. Digit	
	Flex. Sub. Digit	
	Finger Ext.	
	Lumbricales	
	Dors. Inteross.	
	Abd. Min. Digit	
	Palm. Inteross.	
	———	
	Flex. Long. Poll.	
	Flex. Brev. Poll.	
	Ext. Long Poll.	
	Ext. Brev. Poll.	
	Abd. Poll. Longus	
	Abd. Poll. Brev.	
	Add. Poll.	
	Opponens Pollicis	
	———	

ISA. CONNINGHAM 119

LEFT LEG 12/5/39	11/3/39	9/2/39	9/7/39	27/11/38	DATE	RIGHT LEG 27/11/38	9/1/39	9/2/39	3/3/39	5/3/39
					MUSCLE POWER					
					Orbit					
					Facial					
					Mouth					
					Anterior Neck					
					Posterior Neck					
4	3	3	3	2	Back	2	3	3	3	4
					Respiration					
4	3	3	3	2	Quadratus Lumborum	2	3	3	3	4
4	4	3	3	2	Anterior Abdominals	2	3	3	4	4
4	4	3	3	2	Lateral Abdominals	2	3	3	4	4
					———					
4	4	3	3	2	Gluteus Maximus	2	2	2	2	3
5	4	4	3	3	Hip Flexors	2	3	3	3	3
5	4	4	3	3	Sartorius	2	3	3	3	3
4	3	2	2	2	Inward Rotation	2	2	2	2	2
4	4	3	3	3	Outward Rotation	3	3	3	3	3
4	3	3	3	3	Tensor Fasciæ Latæ	2	2	3	3	3
4	3	3	3	3	Hip Abductors	2	2	3	3	3
4	3	3	3	3	Hip Adductors	3	3	3	3	3
5	5	5	4	3	Quadriceps	3	3	3	3	3
4	4	3	3	2	Inner Hamstrings	1	3	3	3	3
4	4	3	3	2	Biceps	1	3	3	3	3
4	4	4	3	4	Gastrocnemius	1	1	1	1	1
4	4	4	4	3	Anterior Tibial	1	1	1	1	1
4	3	3	3	3	Posterior Tibial	1	1	1	1	1
3	3	3	3	3	Peroneals	0	0	0	0	0
4	4	4	4	4	Extensor Long. Digitorum	3	3	3	3	3
5	4	4	3	3	Extensor Prop. Hallucis	3	3	3	4	4
4	4	4	4	4	Flexor Long. Digitorum	2	2	2	2	2
4	4	4	4	4	Short Toe Flexors	2	2	2	2	2
4	4	4	4	4	Flexor Long. Hallucis	2	2	2	2	2
					———					
					LENGTH OF LIMB:					
					Ant. Sup. Spine to Int. Mall.					
					Knee to Mallcolus					
					———					

LEFT ARM	DATE	RIGHT ARM
	MUSCLE POWER	
	Anterior Deltoid	
	Posterior Deltoid	
	Upper Trapezius	
	Mid. Trapezius	
	Low. Trapezius	
	Serratus Magnus	
	Rhomboids	
	Latissimus Dorsi	
	Pect. Major	
	Outward Rotators	
	Biceps	
	Triceps	
	Supinator	
	Pronators	
	Flexor Carpi Rad.	
	Flexor Carpi Uln.	
	Extensor Carpi Rad.	
	Extensor Carpi Uln.	
	Flex. Prof. Digit	
	Flex. Sub. Digit	
	Finger Ext.	
	Lumbricales	
	Dors. Inteross.	
	Abd. Min. Digit	
	Palm. Inteross.	
	———	
	Flex. Long. Poll.	
	Flex. Brev. Poll.	
	Ext. Long Poll.	
	Ext. Brev. Poll.	
	Abd. Poll. Longus	
	Abd. Poll. Brev.	
	Add. Poll.	
	Opponens Pollicis	
	———	

J. CREDIDAN. 121

LEFT LEG						DATE	RIGHT LEG					
4/5/39	16/3/39	16/2/39	9/1/39	17/12/38	17/11/38							
						MUSCLE POWER						
						Orbit						
						Facial						
						Mouth						
						Anterior Neck						
						Posterior Neck						
4	4	4	4	4	4	Back	4	4	4	4	4	4
						Respiration						
4	4	4	4	4	4	Quadratus Lumborum	4	4	4	4	4	4
2	2	2	2	2	2	Anterior Abdominals	3	3	3	3	3	3
2	2	2	2	2	2	Lateral Abdominals	3	3	3	3	3	3
						———						
2	2	2	2	2	2	Gluteus Maximus						
3	3	3	3	3	3	Hip Flexors						
3	3	3	3	3	3	Sartorius						
1	1	1	1	1	1	Inward Rotation						
3	3	3	3	1	1	Outward Rotation						
2	2	2	2	2	1	Tensor Fasciæ Latæ						
2	2	2	2	2	1	Hip Abductors						
2	2	2	2	2	1	Hip Adductors						
2	2	2	1	1	1	Quadriceps						
3	2	2	1	1	1	Inner Hamstrings						
3	2	2	1	1	1	Biceps						
0	0	0	0	0	0	Gastrocnemius						
0	0	0	0	0	0	Anterior Tibial						
0	0	0	0	0	0	Posterior Tibial						
0	0	0	0	0	0	Peroneals						
0	0	0	0	0	0	Extensor Long. Digitorum						
0	0	0	0	0	0	Extensor Prop. Hallucis						
0	0	0	0	0	0	Flexor Long. Digitorum						
0	0	0	0	0	0	Short Toe Flexors						
0	0	0	0	0	0	Flexor Long. Hallucis						
						———						
						LENGTH OF LIMB:						
						Ant. Sup. Spine to Int. Mall.						
						Knee to Mallcolus						
						———						

LEFT ARM	DATE	RIGHT ARM
	MUSCLE POWER	
	Anterior Deltoid	
	Posterior Deltoid	
	Upper Trapezius	
	Mid. Trapezius	
	Low. Trapezius	
	Serratus Magnus	
	Rhomboids	
	Latissimus Dorsi	
	Pect. Major	
	Outward Rotators	
	Biceps	
	Triceps	
	Supinator	
	Pronators	
	Flexor Carpi Rad.	
	Flexor Carpi Uln.	
	Extensor Carpi Rad.	
	Extensor Carpi Uln.	
	Flex. Prof. Digit	
	Flex. Sub. Digit	
	Finger Ext.	
	Lumbricales	
	Dors. Inteross.	
	Abd. Min. Digit	
	Palm. Inteross.	
	———	
	Flex. Long. Poll.	
	Flex. Brev. Poll.	
	Ext. Long Poll.	
	Ext. Brev. Poll.	
	Abd. Poll. Longus	
	Abd. Poll. Brev.	
	Add. Poll.	
	Opponens Pollicis	
	———	

↓ WHITE 124

LEFT LEG 25/4/39	2/12/38	31/10/38	DATE	31/10/38	RIGHT LEG 2/12/38	4/39
			MUSCLE POWER			
			Orbit			
			Facial			
			Mouth			
			Anterior Neck			
			Posterior Neck			
4	2	1	Back	1	2	4
			Respiration			
3	1	1	Quadratus Lumborum	1	2	4
2	2	1	Anterior Abdominals	1	2	2
1	1	0	Lateral Abdominals	0	1	2
			———			
4	2	2	Gluteus Maximus	2	2	4
2	2	1	Hip Flexors	1	1	2
2	2	1	Sartorius	1	1	2
2+	2	0	Inward Rotation	3	3	3
2+	2	1	Outward Rotation	3	3	3
2+	2	2	Tensor Fasciæ Latæ	2	2	2
2+	2	1	Hip Abductors	2	2	2
2+	2	2	Hip Adductors	1	1	2
3+	2	1	Quadriceps	0	1	1
3	3	2	Inner Hamstrings	2	3	3
3	3	2	Biceps	2	3	3
4	3	2	Gastrocnemius	2	3	4
4	2	0	Anterior Tibial	0	2	2
4	3	1	Posterior Tibial	2	3	3
4	4	4	Peroneals	4	4	4
4	4	4	Extensor Long. Digitorum	4	4	4
4	4	4	Extensor Prop. Hallucis	4	4	4
4	4	4	Flexor Long. Digitorum	4	4	4
4	4	4	Short Toe Flexors	4	4	4
4	4	4	Flexor Long. Hallucis	4	4	4
			———			
			LENGTH OF LIMB:			
			Ant. Sup. Spine to Int. Mall.			
			Knee to Mallcolus			
			———			

LEFT ARM 2/4/39	2/12/38	31/10/38	DATE	31/10/38	2/12/38	RIGHT ARM 4/39
			MUSCLE POWER			
3	1	1	Anterior Deltoid	2	3	4
4	3	3	Posterior Deltoid	2	3	3
3	1	1	Upper Trapezius	1	1	4
3	1	1	Mid. Trapezius	1	1	4
3	1	1	Low. Trapezius	1	1	4
			Serratus Magnus			
4	2	1	Rhomboids	1	2	4
4	3	3	Latissimus Dorsi	3	3	3
5	4	4	Pect. Major	4	4	4
3	3	3	Outward Rotators	3	3	4
5	5	4	Biceps	4	4	5
4	4	3	Triceps	3	3	3
5	4	4	Supinator	4	4	5
5	4	4	Pronators	4	4	5
5	4	4	Flexor Carpi Rad.	4	4	5
5	4	4	Flexor Carpi Uln.	4	4	5
5	4	4	Extensor Carpi Rad.	4	4	5
5	4	4	Extensor Carpi Uln.	4	4	5
5	4	4	Flex. Prof. Digit	4	4	5
5	4	4	Flex. Sub. Digit	4	4	5
5	4	4	Finger Ext.	4	4	5
5	4	4	Lumbricales	4	4	5
5	4	4	Dors. Inteross.	4	4	5
5	4	4	Abd. Min. Digit	4	4	5
5	4	4	Palm. Inteross.	4	4	5
			———			
5	4	4	Flex. Long. Poll.	4	4	5
5	4	4	Flex. Brev. Poll.	4	4	5
5	4	4	Ext. Long Poll.	4	4	5
5	4	4	Ext. Brev. Poll.	4	4	5
5	4	4	Abd. Poll. Longus	4	4	5
5	4	4	Abd. Poll. Brev.	4	4	5
5	4	4	Add. Poll.	4	4	5
5	4	4	Opponens Pollicis	4	4	5
			———			

a. Cruickshank 133

LEFT LEG 12/7/39	12/5/39	8/3/39	30/1/39	DATE	RIGHT LEG
				MUSCLE POWER	
				Orbit	
				Facial	
				Mouth	
				Anterior Neck	
				Posterior Neck	
				Back	
				Respiration	
				Quadratus Lumborum	
				Anterior Abdominals	
				Lateral Abdominals	
5	5	4	4	Gluteus Maximus	
4	3	3	2	Hip Flexors	
4	3	3	2	Sartorius	
4	3	3	2	Inward Rotation	
4	4	3	3	Outward Rotation	
3	3	3	3	Tensor Fasciæ Latæ	
3	3	3	3	Hip Abductors	
3	3	3	2	Hip Abductors	
2	2	1	1	Quadriceps	
3	3	3	3	Inner Hamstrings	
3	3	3	3	Biceps	
4	4	4	3	Gastrocnemius	
1	1	1	1	Anterior Tibial	
2	2	1	1	Posterior Tibial	
4	4	4	3	Peroneals	
3	3	3	3	Extensor Long. Digitorum	
3	3	3	3	Extensor Prop. Hallucis	
5	4	4	3	Flexor Long. Digitorum	
5	4	4	3	Short Toe Flexors	
5	4	4	3	Flexor Long. Hallucis	
				LENGTH OF LIMB:	
				Ant. Sup. Spine to Int. Mall.	
				Knee to Mallcolus	

LEFT ARM	DATE	RIGHT ARM
	MUSCLE POWER	
	Anterior Deltoid	
	Posterior Deltoid	
	Upper Trapezius	
	Mid. Trapezius	
	Low. Trapezius	
	Serratus Magnus	
	Rhomboids	
	Latissimus Dorsi	
	Pect. Major	
	Outward Rotators	
	Biceps	
	Triceps	
	Supinator	
	Pronators	
	Flexor Carpi Rad.	
	Flexor Carpi Uln.	
	Extensor Carpi Rad.	
	Extensor Carpi Uln.	
	Flex. Prof. Digit	
	Flex. Sub. Digit	
	Finger Ext.	
	Lumbricales	
	Dors. Inteross.	
	Abd. Min. Digit	
	Palm. Inteross.	
	Flex. Long. Poll.	
	Flex. Brev. Poll.	
	Ext. Long Poll.	
	Ext. Brev. Poll.	
	Abd. Poll. Longus	
	Abd. Poll. Brev.	
	Add. Poll.	
	Opponens Pollicis	

B. FRASER 134

LEFT LEG	DATE	RIGHT LEG
13/4/39 19/10/38 16/8/38 27/8/38 3/3/38 8/12/37 28/10/37 26/8/37		26/8/37 28/10/37 8/12/37 3/3/38 5/5/38 8/8/38 19/10/38 13/4/39
	MUSCLE POWER	
	Orbit	
	Facial	
	Mouth	
	Anterior Neck	
	Posterior Neck	
5 5 4 4 4 3 2 1	Back	1 2 3 4 4 4 5 5
	Respiration	
5 5 4 4 4 3 1 1	Quadratus Lumborum	1 1 3 4 4 4 5 5
5 5 5 4 4 3 2 1	Anterior Abdominals	1 2 3 4 4 5 5 5
5 5 4 4 4 3 1 1	Lateral Abdominals	1 1 3 4 4 4 5 5
	———	
5 5 5 4 4 3 2 1	Gluteus Maximus	1 2 3 4 4 5 5 5
5 5 4 4 4 3 1 1	Hip Flexors	1 2 3 4 4 4 5 5
5 5 4 4 4 3 1 1	Sartorius	1 2 3 4 4 4 5 5
5 5 4 4 4 3 1 1	Inward Rotation	1 2 3 4 4 4 5 5
5 5 4 4 4 3 1 1	Outward Rotation	1 2 3 4 4 4 5 5
5 5 5 4 4 3 1 1	Tensor Fasciæ Latæ	1 2 3 4 4 5 5 5
5 5 5 4 4 3 1 1	Hip Abductors	1 2 3 4 4 5 5 5
5 5 5 4 4 3 2 1	Hip Abductors	1 2 3 4 4 5 5 5
5 5 4 4 4 3 1 1	Quadriceps	1 1 3 4 4 4 5 5
5 5 4 4 4 3 2 1	Inner Hamstrings	1 2 3 4 4 4 5 5
5 5 4 4 4 3 2 1	Biceps	1 2 3 4 4 4 5 5
3 3 2 2 1 1 1 0	Gastrocnemius	0 1 1 1 2 3 4 4
4 3 2 2 1 1 1 0	Anterior Tibial	0 1 1 1 2 3 4 4
4 3 2 2 1 1 1 0	Posterior Tibial	0 1 1 1 1 3 4 4
4 3 2 1 1 1 1 1	Peroneals	1 1 1 1 1 2 4 4
3 1 1 1 1 1 1 0	Extensor Long. Digitorum	0 1 1 1 1 2 3 3
3 1 1 1 1 1 1 0	Extensor Prop. Hallucis	0 1 1 1 1 1 4 4
4 2 1 2 1 1 1 1	Flexor Long. Digitorum	1 1 1 1 2 2 4 4
4 2 1 2 1 1 1 1	Short Toe Flexors	1 1 1 1 2 2 4 4
4 2 1 2 1 1 1 1	Flexor Long. Hallucis	1 1 1 1 2 2 4 4
	———	
	LENGTH OF LIMB:	
	Ant. Sup. Spine to Int. Mall.	
	Knee to Mallcolus	
	———	

LEFT ARM	DATE	RIGHT ARM
13/4/39 19/10/38 16/8/38 27/8/38 3/3/38 8/12/37 28/10/37 26/8/37		26/8/37 28/10/37 8/12/37 3/3/38 5/5/38 8/8/38 19/10/38 13/4/39
	MUSCLE POWER	
5 5 5 4 4 4 3 2	Anterior Deltoid	2 3 4 4 4 5 5 5
5 5 5 4 4 4 3 1	Posterior Deltoid	1 3 4 4 4 5 5 5
5 5 4 4 4 4 3 2	Upper Trapezius	2 3 4 4 4 4 5 5
5 4 4 4 4 4 3 2	Mid. Trapezius	2 3 4 4 4 4 5 5
5 4 4 4 4 4 3 2	Low. Trapezius	2 3 4 4 4 4 5 5
5 5 5 4 4 4 3 2	Serratus Magnus	2 3 4 4 4 5 5 5
5 5 4 4 4 4 2 1	Rhomboids	1 3 4 4 4 4 5 5
5 5 5 4 4 4 3 2	Latissimus Dorsi	2 3 4 4 4 5 5 5
5 5 4 4 4 4 3 2	Pect. Major	2 3 4 4 4 5 5 5
5 5 4 4 4 4 3 2	Outward Rotators	2 3 4 4 4 5 5 5
5 5 4 4 4 4 4 3	Biceps	3 4 4 4 4 5 5 5
5 5 4 4 4 3 3 2	Triceps	2 3 3 4 4 4 5 5
5 5 4 4 4 4 3 3	Supinator	3 3 4 4 4 4 5 5
5 5 4 4 4 4 3 3	Pronators	3 3 4 4 4 4 5 5
5 5 4 4 4 3 2 1	Flexor Carpi Rad.	1 2 3 4 4 4 5 5
5 5 4 4 4 3 2 1	Flexor Carpi Uln.	1 2 3 4 4 4 5 5
5 4 4 4 4 3 2 1	Extensor Carpi Rad.	1 2 3 4 4 4 4 5
5 4 4 4 4 3 2 1	Extensor Carpi Uln.	1 2 3 4 4 4 4 5
5 4 4 4 3 3 3 2	Flex. Prof. Digit	2 3 3 3 4 4 4 5
5 4 4 4 3 3 3 2	Flex. Sub. Digit	2 3 3 3 4 4 4 5
5 4 4 4 4 4 3 3	Finger Ext.	3 3 3 4 4 4 4 5
5 4 2 1 1 1 0 0	Lumbricales	0 1 1 1 1 3 4 5
5 4 3 2 1 1 0 0	Dors. Inteross.	0 1 1 1 2 3 4 5
5 4 3 2 1 1 0 0	Abd. Min. Digit	0 1 1 1 2 3 4 5
5 5 4 4 1 1 0 0	Palm. Inteross.	0 1 1 1 1 4 4 5
	———	
5 5 4 4 4 3 3 2	Flex. Long. Poll.	2 3 4 4 4 4 5 5
5 5 4 4 4 3 3 2	Flex. Brev. Poll.	2 3 4 4 4 4 5 5
5 4 4 4 4 4 3 3	Ext. Long Poll.	3 3 3 4 4 4 4 5
5 4 4 4 4 4 3 3	Ext. Brev. Poll.	3 3 3 4 4 4 4 5
5 4 4 3 3 3 2 1	Abd. Poll. Longus	1 2 3 3 4 4 5 5
5 4 4 3 3 3 2 1	Abd. Poll. Brev.	1 2 3 3 3 4 4 5
5 4 4 4 3 3 3 2	Add. Poll.	2 3 3 3 3 4 4 5
5 4 4 3 3 3 2 1	Opponens Pollicis	1 2 3 3 3 4 4 5
	———	

1. ADIE 135

LEFT LEG	DATE	RIGHT LEG
7/1/39 4/5/39 28/2/39 31/1/39 30/12/38 30/11/38 31/10/38		31/10/38 30/11/38 30/12/38 31/1/39 28/2/39 4/5/39
	MUSCLE POWER	
	Orbit	
	Facial	
	Mouth	
	Anterior Neck	
	Posterior Neck	
3 3 2 2 2 1 .	Back	. 1 2 2 2 3
	Respiration	
3 3 2 2 2 1 .	Quadratus Lumborum	. 1 2 2 2 3
2 2 2 2 2 2 2	Anterior Abdominals	2 2 2 2 2 3
2 2 2 2 2 2 2	Lateral Abdominals	2 2 2 2 3 3
	———	
1 1 1 1 1 1 2	Gluteus Maximus	2 2 3 4 4 4
2 2 2 1 1 0 0	Hip Flexors	1 1 2 2 2 2
2 2 2 1 1 0 0	Sartorius	1 1 2 2 2 2
1 1 1 1 1 1 1	Inward Rotation	3 4 4 4 4 4
3 3 3 2 1 1 0	Outward Rotation	2 4 4 4 4 4
2 2 2 2 2 2 2	Tensor Fasciæ Latæ	3 3 3 4 4 4
3 3 2 2 2 2 2	Hip Abductors	3 3 3 4 4 4
3 3 2 2 2 2 2	Hip Abductors	3 3 3 3 3 3
2 2 2 1 1 1 1	Quadriceps	1 1 2 2 2 3
2 2 2 2 2 1 1	Inner Hamstrings	1 3 3 3 3 3
2 2 2 2 2 1 1	Biceps	1 3 3 3 3 3
1 1 1 1 1 1 1	Gastrocnemius	1 2 3 4 4 5
1 1 1 1 1 1 1	Anterior Tibial	1 1 1 2 3 3
1 1 1 1 1 1 1	Posterior Tibial	1 1 2 3 4 4
2 2 2 2 2 2 2	Peroneals	3 4 5 5 5 5
2 2 2 2 2 2 1	Extensor Long. Digitorum	4 4 4 4 5 5
1 1 1 1 1 1 0	Extensor Prop. Hallucis	3 4 5 5 5 5
3 2 2 2 2 2 2	Flexor Long. Digitorum	4 4 4 5 5 5
3 2 2 2 2 2 2	Short Toe Flexors	4 4 4 5 5 5
3 2 2 2 2 2 2	Flexor Long. Hallucis	4 4 4 5 5 5
	———	
	LENGTH OF LIMB:	
	Ant. Sup. Spine to Int. Mall.	
	Knee to Mallcolus	
	———	

LEFT ARM	DATE	RIGHT ARM 31/10/38 30/11/38 30/12/38 31/1/39 4/5/39
	MUSCLE POWER	
	Anterior Deltoid	3 3 4 4 4
	Posterior Deltoid	3 3 4 4 4
	Upper Trapezius	
	Mid. Trapezius	
	Low. Trapezius	
	Serratus Magnus	
	Rhomboids	
	Latissimus Dorsi	3 4 4 4 4
	Pect. Major	3 4 4 4 4
	Outward Rotators	2 4 5 5 5
	Biceps	4 4 4 4 4
	Triceps	4 4 4 4 4
	Supinator	4 4 4 5 5
	Pronators	3 4 5 5 5
	Flexor Carpi Rad.	4 4 5 5 5
	Flexor Carpi Uln.	4 4 5 5 5
	Extensor Carpi Rad.	4 4 5 5 5
	Extensor Carpi Uln.	4 4 5 5 5
	Flex. Prof. Digit	4 4 5 5 5
	Flex. Sub. Digit	4 4 5 5 5
	Finger Ext.	4 4 5 5 5
	Lumbricales	4 4 5 5 5
	Dors. Inteross.	4 4 5 5 5
	Abd. Min. Digit	4 4 5 5 5
	Palm. Inteross.	4 4 5 5 5
	———	
	Flex. Long. Poll.	4 4 5 5 5
	Flex. Brev. Poll.	4 4 5 5 5
	Ext. Long Poll.	4 4 5 5 5
	Ext. Brev. Poll.	4 4 5 5 5
	Abd. Poll. Longus	4 4 5 5 5
	Abd. Poll. Brev.	4 4 5 5 5
	Add. Poll.	4 4 5 5 5
	Opponens Pollicis	4 4 5 5 5
	———	

A. McLEOD) 136.

LEFT LEG 13/VI/39	15/IX/39	2/III/39	25/I/39	DATE	RIGHT LEG 25/I/39	2/III/39	5/IV/39	13/VI/39
				MUSCLE POWER				
				Orbit				
				Facial				
				Mouth				
				Anterior Neck				
				Posterior Neck				
4	3	3	3	Back	3	3	3	4
				Respiration				
4	3	3	3	Quadratus Lumborum	3	3	3	4
4	3	3	3	Anterior Abdominals	3	3	3	4
4	3	3	3	Lateral Abdominals	3	3	3	4
				———				
4	4	4	3	Gluteus Maximus	2	3	3	4
3	3	3	3	Hip Flexors	2	3	3	3
3	3	3	3	Sartorius	2	3	3	3
4	4	4	4	Inward Rotation	3	3	4	4
4	4	4	4	Outward Rotation	3	3	4	4
3	3	3	3	Tensor Fasciæ Latæ	2	2	3	3
3	3	3	3	Hip Abductors	2	2	3	3
3	2	2	4	Hip Adductors	3	2	2	3
4	4	3	4	Quadriceps	3	3	4	4
4	4	4	3	Inner Hamstrings	3	3	3	3
4	4	4	3	Biceps	3	3	3	3
4	4	4	4	Gastrocnemius	3	3	4	4
4	4	4	4	Anterior Tibial	3	3	4	4
4	4	4	4	Posterior Tibial	2	3	4	4
4	4	4	4	Peroneals	4	4	4	4
4	4	4	4	Extensor Long. Digitorum	3	3	3	4
4	4	4	4	Extensor Prop. Hallucis	4	4	4	4
3	3	3	3	Flexor Long. Digitorum	3	3	3	3
3	3	3	3	Short Toe Flexors	3	3	3	3
3	3	3	3	Flexor Long. Hallucis	3	3	3	3
				———				
				LENGTH OF LIMB:				
				Ant. Sup. Spine to Int. Mall.				
				Knee to Mallcolus				
				———				

LEFT ARM	DATE	RIGHT ARM
	MUSCLE POWER	
	Anterior Deltoid	
	Posterior Deltoid	
	Upper Trapezius	
	Mid. Trapezius	
	Low. Trapezius	
	Serratus Magnus	
	Rhomboids	
	Latissimus Dorsi	
	Pect. Major	
	Outward Rotators	
	Biceps	
	Triceps	
	Supinator	
	Pronators	
	Flexor Carpi Rad.	
	Flexor Carpi Uln.	
	Extensor Carpi Rad.	
	Extensor Carpi Uln.	
	Flex. Prof. Digit	
	Flex. Sub. Digit	
	Finger Ext.	
	Lumbricales	
	Dors. Inteross.	
	Abd. Min. Digit	
	Palm. Inteross.	
	———	
	Flex. Long. Poll.	
	Flex. Brev. Poll.	
	Ext. Long Poll.	
	Ext. Brev. Poll.	
	Abd. Poll. Longus	
	Abd. Poll. Brev.	
	Add. Poll.	
	Opponens Pollicis	
	———	

SKEA 143

LEFT LEG (14/7/39 · 9/5/39 · 13/3/39 · 9/1/39 · 9/12/38 · 9/11/38 · 9/10/38 · 9/8/38)	DATE	RIGHT LEG (9/8/38 · 9/10/38 · 9/11/38 · 9/12/38 · 9/1/39 · 13/3/39 · 9/5/39 · 14/7/39)
	MUSCLE POWER	
	Orbit	
	Facial	
	Mouth	
	Anterior Neck	
	Posterior Neck	
4 4 3 3 3 3 3 3	Back	3 3 3 3 3 3 4 4
	Respiration	
4 4 4 3 3 3 3 3	Quadratus Lumborum	3 3 3 3 3 4 4 4
4 4 4 4 4 4 4 4	Anterior Abdominals	4 4 4 4 4 4 4 4
4 4 4 3 3 3 3 3	Lateral Abdominals	3 3 3 3 3 4 4 4
	———	
4 4 3 3 3 3 3 3	Gluteus Maximus	3 3 3 3 3 3 4 4
4 4 4 4 4 3 3 3	Hip Flexors	3 3 3 3 3 3 4 4
4 4 4 4 4 3 3 3	Sartorius	3 3 3 3 3 3 4 4
4 4 3 3 3 3 3 3	Inward Rotation	3 3 3 3 3 3 4 4
4 4 3 3 3 3 3 3	Outward Rotation	3 3 3 3 3 3 4 4
4 4 4 4 4 4 4 4	Tensor Fasciæ Latæ	3 3 3 3 3 3 4 4
4 4 4 4 4 4 4 4	Hip Abductors	3 3 3 3 3 3 4 4
4 4 4 4 4 4 4 4	Hip Abductors	3 3 3 3 3 3 4 4
4 4 3 3 3 3 3 3	Quadriceps	2 2 2 2 3 3 4 4
4 4 4 4 4 4 4 3	Inner Hamstrings	3 4 4 4 4 4 4 4
4 4 4 4 4 4 4 3	Biceps	3 4 4 4 4 4 4 4
4 4 4 4 4 4 4 4	Gastrocnemius	4 4 4 4 4 4 4 4
3 3 3 3 3 3 3 3	Anterior Tibial	2 2 2 2 3 3 3 3
3 3 3 3 3 3 3 3	Posterior Tibial	2 2 2 2 3 3 3 3
3 3 3 3 3 3 3 3	Peroneals	4 4 4 4 4 4 4 4
3 3 3 3 3 3 3 3	Extensor Long. Digitorum	3 3 3 3 3 3 3 3
2 2 2 2 2 2 2 2	Extensor Prop. Hallucis	2 3 3 3 3 3 3 3
3 3 3 3 3 3 3 3	Flexor Long. Digitorum	3 3 3 3 3 3 3 3
3 3 3 3 3 3 3 3	Short Toe Flexors	3 3 3 3 3 3 3 3
3 3 3 3 3 3 3 3	Flexor Long. Hallucis	3 3 3 3 3 3 3 3
	———	
	LENGTH OF LIMB:	
	Ant. Sup. Spine to Int. Mall.	
	Knee to Mallcolus	
	———	

LEFT ARM (14/7/39 · 9/5/39 · 13/3/39 · 9/1/39 · 9/12/38 · 9/11/38 · 9/10/38 · 9/8/38)	DATE	RIGHT ARM (9/8/38 · 9/10/38 · 9/11/38 · 9/12/38 · 9/1/39 · 13/3/39 · 9/5/39 · 14/7/39)
	MUSCLE POWER	
5 5 5 5 5 5 5 4	Anterior Deltoid	4 5 5 5 5 5 5 5
5 5 5 5 5 5 5 4	Posterior Deltoid	4 5 5 5 5 5 5 5
5 5 5 5 5 5 5 4	Upper Trapezius	4 5 5 5 5 5 5 5
5 5 5 5 5 5 5 4	Mid. Trapezius	4 5 5 5 5 5 5 5
5 5 5 5 5 5 5 4	Low. Trapezius	4 5 5 5 5 5 5 5
5 5 5 5 5 5 5 4	Serratus Magnus	4 5 5 5 5 5 5 5
5 5 5 5 5 5 5 4	Rhomboids	4 5 5 5 5 5 5 5
5 5 5 5 5 5 5 4	Latissimus Dorsi	4 5 5 5 5 5 5 5
5 5 5 5 5 5 5 4	Pect. Major	4 5 5 5 5 5 5 5
5 5 5 5 5 5 5 4	Outward Rotators	4 5 5 6 5 5 5 5
5 5 5 5 5 5 5 4	Biceps	4 5 5 5 5 5 5 5
5 5 4 4 4 4 4 4	Triceps	4 4 4 4 4 4 5 5
5 5 4 4 4 4 3 3	Supinator	3 4 4 4 4 4 5 5
5 5 4 4 4 4 4 4	Pronators	3 4 4 4 4 4 5 5
5 5 4 4 4 4 4 4	Flexor Carpi Rad.	3 3 4 4 4 4 4 4
4 4 4 4 4 3 3 3	Flexor Carpi Uln.	3 3 3 3 3 3 4 4
4 3 3 3 3 3 3 3	Extensor Carpi Rad.	3 3 4 4 4 4 4 4
4 4 4 4 4 4 3 3	Extensor Carpi Uln.	3 3 4 4 4 4 4 4
4 4 4 4 4 4 3 3	Flex. Prof. Digit	4 4 4 4 4 4 5 5
5 5 4 3 3 3 3 3	Flex. Sub. Digit	4 4 4 4 4 4 5 5
5 5 4 3 3 3 3 3	Finger Ext.	3 3 3 3 3 3 4 4
4 4 3 3 3 2 2 2	Lumbricales	3 3 3 3 3 3 3 4
5 4 3 2 1 1 1 1	Dors. Inteross.	3 3 3 3 3 3 3 4
5 4 3 2 1 1 1 1	Abd. Min. Digit	3 3 3 3 3 3 3 4
5 4 3 2 1 1 1 1	Palm. Inteross.	3 3 3 3 3 3 3 4
	———	
3 3 3 3 3 3 3 3	Flex. Long. Poll.	3 3 3 3 3 3 3 3
3 3 3 3 3 3 3 3	Flex. Brev. Poll.	3 3 3 3 3 3 3 3
4 4 3 3 3 3 2 2	Ext. Long Poll.	2 2 3 3 3 4 4 4
4 4 3 3 3 3 2 2	Ext. Brev. Poll.	2 2 3 3 3 4 4 4
4 4 3 3 3 2 1 1	Abd. Poll. Longus	1 1 3 3 3 4 4 4
4 4 3 3 3 2 1 1	Abd. Poll. Brev.	1 1 3 3 3 4 4 4
3 3 3 3 2 2 2 2	Add. Poll.	2 2 2 3 3 3 3 3
4 4 3 3 2 2 2 1	Opponens Pollicis	2 2 2 2 3 3 3 4
	———	

D. FISHER 147.

LEFT LEG						DATE	RIGHT LEG					
11/5/39	14/3/39	13/2/39	11/1/39	2/13/38	2/11/38		3/11/38	2/13/38	1/1/39	12/2/39	14/3/39	14/5/39
						MUSCLE POWER						
						Orbit						
						Facial						
						Mouth						
						Anterior Neck						
						Posterior Neck						
3	3	3	3	3	3	Back	3	3	3	3	3	3
						Respiration						
3	3	2	2	2	2	Quadratus Lumborum	2	2	2	2	3	3
3	3	3	3	3	3	Anterior Abdominals	3	2	3	3	3	3
3	3	2	1	1	3	Lateral Abdominals	3	2	1	2	3	3
						———						
1	1	1	1	1	1	Gluteus Maximus	1	1	1	1	1	1
3	3	2	1	1	1	Hip Flexors	1	1	1	1	2	2
3	3	2	1	1	1	Sartorius	1	1	1	1	2	2
1	1	1	1	1	1	Inward Rotation	1	1	1	1	0	0
2	1	1	1	1	1	Outward Rotation	2	2	1	1	1	1
2	2	2	1	1	1	Tensor Fasciæ Latæ	1	1	1	1	1	1
2	2	2	1	1	1	Hip Abductors	1	1	1	1	1	1
2	1	1	1	0	0	Hip Abductors	0	0	0	0	0	1
0	0	0	0	0	0	Quadriceps	0	0	0	0	0	0
0	0	1	2	2	2	Inner Hamstrings	2	2	2	1	0	0
0	0	1	2	2	2	Biceps	2	2	2	1	0	0
2	2	2	2	0	0	Gastrocnemius	0	1	1	1	1	1
0	0	0	0	0	0	Anterior Tibial	0	0	0	0	0	0
1	1	1	1	0	0	Posterior Tibial	0	0	0	1	1	1
2	2	2	0	0	1	Peroneals	2	2	3	3	3	3
2	2	1	1	0	0	Extensor Long. Digitorum	1	2	2	2	1	1
2	2	2	0	0	0	Extensor Prop. Hallucis	0	0	0	0	0	0
2	2	1	1	0	0	Flexor Long. Digitorum	1	2	2	2	1	1
3	2	1	1	0	0	Short Toe Flexors	1	2	2	2	1	1
2	2	1	1	0	0	Flexor Long. Hallucis	1	2	2	2	1	1
						———						
						LENGTH OF LIMB:						
						Ant. Sup. Spine to Int. Mall.						
						Knee to Mallcolus						
						———						

LEFT ARM	DATE	RIGHT ARM
	MUSCLE POWER	
	Anterior Deltoid	
	Posterior Deltoid	
	Upper Trapezius	
	Mid. Trapezius	
	Low. Trapezius	
	Serratus Magnus	
	Rhomboids	
	Latissimus Dorsi	
	Pect. Major	
	Outward Rotators	
	Biceps	
	Triceps	
	Supinator	
	Pronators	
	Flexor Carpi Rad.	
	Flexor Carpi Uln.	
	Extensor Carpi Rad.	
	Extensor Carpi Uln.	
	Flex. Prof. Digit	
	Flex. Sub. Digit	
	Finger Ext.	
	Lumbricales	
	Dors. Inteross.	
	Abd. Min. Digit	
	Palm. Inteross.	
	———	
	Flex. Long. Poll.	
	Flex. Brev. Poll.	
	Ext. Long Poll.	
	Ext. Brev. Poll.	
	Abd. Poll. Longus	
	Abd. Poll. Brev.	
	Add. Poll.	
	Opponens Pollicis	
	———	

B. WILDERSEY 148

LEFT LEG 5/2/39	13/4/39	10/2/39	9/1/39	5/12/38	27/10/36	DATE	RIGHT LEG 27/10/36	5/12/38	2/1/39	12/2/39	13/4/39	5/7/39
						MUSCLE POWER						
						Orbit						
						Facial						
						Mouth						
						Anterior Neck						
						Posterior Neck						
4	4	4	4	4	4	Back	5	5	5	5	5	5
						Respiration						
4	4	4	4	4	3	Quadratus Lumborum	3	4	4	4	4	4
3	3	3	3	2	2	Anterior Abdominals	2	2	3	3	3	3
3	3	3	3	2	2	Lateral Abdominals	3	3	3	3	3	3
						———						
2	2	2	2	0	0	Gluteus Maximus	0	0	3	3	3	3
4	3	4	4	3	3	Hip Flexors	5	5	5	5	5	5
4	3	4	4	3	3	Sartorius	5	5	5	5	5	5
3	3	4	4	4	4	Inward Rotation	4	4	4	4	4	4
3	3	3	2	2	2	Outward Rotation	2	3	3	4	4	4
4	3	4	4	3	2	Tensor Fasciæ Latæ	2	3	4	4	4	4
4	3	4	4	3	2	Hip Abductors	2	3	4	4	4	4
4	4	4	4	4	4	Hip Abductors	4	4	4	4	4	4
4	4	4	4	4	4	Quadriceps	4	5	5	5	5	5
3	4	4	4	4	4	Inner Hamstrings	4	5	5	5	5	5
3	4	4	4	4	4	Biceps	4	5	5	5	5	5
0	0	0	0	0	0	Gastrocnemius	4	4	4	4	4	4
0	0	0	0	0	0	Anterior Tibial	4	4	4	4	4	4
0	0	0	0	0	0	Posterior Tibial	4	4	4	4	4	4
1	1	1	1	0	0	Peroneals	4	4	4	4	4	4
1	1	1	0	0	0	Extensor Long. Digitorum	4	4	4	4	4	4
0	0	0	0	0	0	Extensor Prop. Hallucis	5	5	5	5	5	5
1	1	1	0	0	0	Flexor Long. Digitorum	4	4	4	4	4	4
1	1	1	0	0	0	Short Toe Flexors	4	4	4	4	4	4
1	1	1	0	0	0	Flexor Long. Hallucis	4	4	4	4	4	4
						———						
						LENGTH OF LIMB:						
						Ant. Sup. Spine to Int. Mall.						
						Knee to Mallcolus						
						———						

LEFT ARM	DATE	RIGHT ARM
	MUSCLE POWER	
	Anterior Deltoid	
	Posterior Deltoid	
	Upper Trapezius	
	Mid. Trapezius	
	Low. Trapezius	
	Serratus Magnus	
	Rhomboids	
	Latissimus Dorsi	
	Pect. Major	
	Outward Rotators	
	Biceps	
	Triceps	
	Supinator	
	Pronators	
	Flexor Carpi Rad.	
	Flexor Carpi Uln.	
	Extensor Carpi Rad.	
	Extensor Carpi Uln.	
	Flex. Prof. Digit	
	Flex. Sub. Digit	
	Finger Ext.	
	Lumbricales	
	Dors. Inteross.	
	Abd. Min. Digit	
	Palm. Inteross.	
	———	
	Flex. Long. Poll.	
	Flex. Brev. Poll.	
	Ext. Long Poll.	
	Ext. Brev. Poll.	
	Abd. Poll. Longus	
	Abd. Poll. Brev.	
	Add. Poll.	
	Opponens Pollicis	
	———	

S. DUFFY 150

LEFT LEG 12/4/39	12/5/39	15/3/39	13/1/39	15/11/38	21/10/38	DATE	RIGHT LEG 21/10/38	15/11/38	3/1/39	15/2/39	12/3/39	12/4/39
						MUSCLE POWER						
						Orbit						
						Facial						
						Mouth						
						Anterior Neck						
						Posterior Neck						
5	5	4	4	3	3	Back	2	3	4	4	4	5
						Respiration						
5	5	4	4	3	3	Quadratus Lumborum	3	3	4	4	4	5
5	5	4	4	3	3	Anterior Abdominals	3	3	4	4	4	5
5	5	4	4	3	3	Lateral Abdominals	3	3	4	4	4	5
						———						
4	4	3	3	3	3	Gluteus Maximus	2	2	2	3	3	3
5	5	4	4	4	4	Hip Flexors	4	4	4	4	4	5
5	5	4	4	4	4	Sartorius	4	4	4	4	4	5
5	5	4	4	4	4	Inward Rotation	2	2	3	3	4	4
5	5	4	4	4	4	Outward Rotation	2	2	4	4	4	5
4	3	2	2	2	2	Tensor Fasciæ Latæ	1	2	2	2	2	2
4	3	2	2	2	2	Hip Abductors	1	2	2	2	2	2
5	5	4	4	3	3	Hip Abductors	4	4	4	4	4	4
3	3	3	3	2	2	Quadriceps	3	3	3	3	3	4
5	5	4	3	3	3	Inner Hamstrings	1	1	2	2	2	2
5	5	4	3	3	3	Biceps	1	1	2	2	2	2
5	5	4	4	4	3	Gastrocnemius	0	2	2	3	3	3
5	5	4	4	3	2	Anterior Tibial	0	1	1	1	1	1
5	5	4	4	4	3	Posterior Tibial	0	1	1	2	2	2
5	5	4	4	4	3	Peroneals	1	2	3	3	3	4
5	5	4	4	4	3	Extensor Long. Digitorum	1	3	3	3	3	3
5	5	4	4	4	3	Extensor Prop. Hallucis	1	3	3	3	3	4
5	5	4	4	4	4	Flexor Long. Digitorum	4	4	4	4	4	5
5	5	4	4	4	4	Short Toe Flexors	4	4	4	4	4	5
5	5	4	4	4	4	Flexor Long. Hallucis	4	4	4	4	4	5
						———						
						LENGTH OF LIMB:						
						Ant. Sup. Spine to Int. Mall.						
						Knee to Mallcolus						
						———						

LEFT ARM	DATE	RIGHT ARM
	MUSCLE POWER	
	Anterior Deltoid	
	Posterior Deltoid	
	Upper Trapezius	
	Mid. Trapezius	
	Low. Trapezius	
	Serratus Magnus	
	Rhomboids	
	Latissimus Dorsi	
	Pect. Major	
	Outward Rotators	
	Biceps	
	Triceps	
	Supinator	
	Pronators	
	Flexor Carpi Rad.	
	Flexor Carpi Uln.	
	Extensor Carpi Rad.	
	Extensor Carpi Uln.	
	Flex. Prof. Digit	
	Flex. Sub. Digit	
	Finger Ext.	
	Lumbricales	
	Dors. Inteross.	
	Abd. Min. Digit	
	Palm. Inteross.	
	———	
	Flex. Long. Poll.	
	Flex. Brev. Poll.	
	Ext. Long Poll.	
	Ext. Brev. Poll.	
	Abd. Poll. Longus	
	Abd. Poll. Brev.	
	Add. Poll.	
	Opponens Pollicis	
	———	

GEORGE CUNNINGHAM 153

LEFT LEG	DATE	RIGHT LEG
	MUSCLE POWER	
	Orbit	
	Facial	
	Mouth	
	Anterior Neck	
	Posterior Neck	
	Back	
	Respiration	
	Quadratus Lumborum	
	Anterior Abdominals	
	Lateral Abdominals	
	———	
	Gluteus Maximus	
	Hip Flexors	
	Sartorius	
	Inward Rotation	
	Outward Rotation	
	Tensor Fasciæ Latæ	
	Hip Abductors	
	Hip Abductors	
	Quadriceps	
	Inner Hamstrings	
	Biceps	
	Gastrocnemius	
	Anterior Tibial	
	Posterior Tibial	
	Peroneals	
	Extensor Long. Digitorum	
	Extensor Prop. Hallucis	
	Flexor Long. Digitorum	
	Short Toe Flexors	
	Flexor Long. Hallucis	
	———	
	LENGTH OF LIMB:	
	Ant. Sup. Spine to Int. Mall.	
	Knee to Mallcolus	
	———	

LEFT ARM 7/39	22/4/39	21/2/39	11/1/39	2/12/38	2/11/38	DATE	RIGHT ARM 2/11/38	2/12/38	7/1/39	2/2/39	22/4/39	7/7/39
						MUSCLE POWER						
5	5	5	4	4	3	Anterior Deltoid	0	0	0	0	0	0
5	5	5	4	4	3	Posterior Deltoid	0	0	0	0	0	0
5	5	5	4	4	3	Upper Trapezius	3	3	3	3	3	3
5	5	5	4	4	3	Mid. Trapezius	3	3	3	3	3	3
5	5	5	4	4	3	Low. Trapezius	3	3	3	3	3	3
5	5	5	4	4	4	Serratus Magnus	2	2	2	3	3	3
4	4	4	4	3	3	Rhomboids	0	1	1	1	1	1
5	5	5	5	4	3	Latissimus Dorsi	1	1	1	1	1	1
5	5	5	5	4	3	Pect. Major	0	1	1	1	1	1
4	4	4	5	3	3	Outward Rotators	0	1	1	1	1	1
					5	Biceps	0	0	1	1	1	1
					5	Triceps	0	0	0	0	0	1
					5	Supinator	1	2	2	2	2	2
					5	Pronators	2	2	2	2	3	3
					5	Flexor Carpi Rad.	2	2	2	2	2	2
					5	Flexor Carpi Uln.	1	1	1	2	2	3
					5	Extensor Carpi Rad.	2	2	2	2	2	2
					5	Extensor Carpi Uln.	2	2	3	3	3	3
					5	Flex. Prof. Digit	2	2	3	3	3	3
					5	Flex. Sub. Digit	2	3	3	3	3	3
					5	Finger Ext.	2	3	3	3	3	3
					5	Lumbricales	1	1	1	1	1	3
					5	Dors. Inteross.	1	1	1	1	1	1
					5	Abd. Min. Digit	1	1	1	1	1	1
					5	Palm. Inteross.	1	1	1	1	1	1
					5	———						
					5	Flex. Long. Poll.	2	3	3	3	3	3
					5	Flex. Brev. Poll.	2	3	3	3	3	3
					5	Ext. Long Poll.	2	2	2	2	2	2
					5	Ext. Brev. Poll.	2	2	2	2	2	2
					5	Abd. Poll. Longus	2	2	2	2	2	2
					5	Abd. Poll. Brev.	2	2	2	2	2	2
					5	Add. Poll.	2	2	2	2	2	2
					5	Opponens Pollicis	1	1	1	1	2	2
						———						

E WILSON 155

LEFT LEG 4/5/39	12/3/39	12/2/39	9/1/39	4/12/38	4/11/38	DATE	RIGHT LEG 4/11/38	4/12/38	9/1/39	12/2/39	12/3/39	4/5/39
						MUSCLE POWER						
						Orbit						
						Facial						
						Mouth						
						Anterior Neck						
						Posterior Neck						
3	2	2	2	2	2	Back	1	2	2	2	2	3
						Respiration						
3	2	2	1	1	1	Quadratus Lumborum	0	0	0	1	2	2
3	3	3	2	2	1	Anterior Abdominals	1	1	1	1	1	1
3	2	2	2	2	1	Lateral Abdominals	1	1	1	1	1	1
						———						
3	3	3	2	2	1	Gluteus Maximus	1	1	2	2	2	2
1	1	1	0	0	0	Hip Flexors	0	0	0	2	2	2
1	1	1	0	0	0	Sartorius	0	0	0	2	2	2
1	1	1	1	1	1	Inward Rotation	1	1	1	1	1	1
2	2	2	2	2	2	Outward Rotation	2	1	2	2	2	2
3	2	2	2	2	2	Tensor Fasciæ Latæ	1	1	2	2	2	3
3	2	2	2	2	2	Hip Abductors	1	1	2	2	2	3
1	1	1	0	0	0	Hip Adductors	1	1	1	1	1	2
1	1	1	0	0	0	Quadriceps	1	1	1	1	1	1
2	2	2	0	0	0	Inner Hamstrings	1	1	1	1	2	2
2	2	2	0	0	0	Biceps	1	1	1	1	2	2
2	2	2	1	1	1	Gastrocnemius	1	1	1	2	2	2
1	1	1	1	1	0	Anterior Tibial	0	0	0	0	0	0
2	1	1	1	0	0	Posterior Tibial	1	1	1	1	1	2
1	1	1	1	1	1	Peroneals	2	2	2	3	3	3
2	2	2	2	2	1	Extensor Long. Digitorum	1	1	1	1	2	2
3	3	3	2	2	0	Extensor Prop. Hallucis	0	1	1	2	2	2
2	2	2	2	2	2	Flexor Long. Digitorum	2	2	2	2	2	2
2	2	2	2	2	2	Short Toe Flexors	2	2	2	2	2	2
2	2	2	2	2	2	Flexor Long. Hallucis	2	2	2	2	2	2
						———						
						LENGTH OF LIMB:						
						Ant. Sup. Spine to Int. Mall.						
						Knee to Mallcolus						
						———						

LEFT ARM 4/5/39	12/3/39	12/2/39	9/1/39	4/12/38	4/11/38	DATE	RIGHT ARM 4/11/38	4/12/38
						MUSCLE POWER		
5	5	4	4	4	4	Anterior Deltoid	5	
5	4	4	4	3	0	Posterior Deltoid		
5	5	5	5	5	4	Upper Trapezius		
5	5	5	4	4	2	Mid. Trapezius		
5	5	5	4	4	2	Low. Trapezius		
5	5	5	5	5	4	Serratus Magnus		
5	4	4	4	4	3	Rhomboids		
5	5	5	4	3	3	Latissimus Dorsi		
5	5	4	4	4	4	Pect. Major		
5	4	4	4	3	2	Outward Rotators		
5	5	5	5	4	2	Biceps		
5	5	5	5	4	2	Triceps		
5	5	5	5	4	4	Supinator		
5	5	5	5	4	3	Pronators		
5	4	4	4	4	3	Flexor Carpi Rad.		
5	4	4	4	4	3	Flexor Carpi Uln.		
5	5	5	5	4	4	Extensor Carpi Rad.		
5	5	5	5	4	4	Extensor Carpi Uln.		
5	5	5	5	4	4	Flex. Prof. Digit		
5	5	5	5	4	4	Flex. Sub. Digit		
4	4	4	4	4	3	Finger Ext.		
4	4	4	4	4	3	Lumbricales		
4	4	4	4	4	3	Dors. Inteross.		
4	4	4	4	4	3	Abd. Min. Digit		
4	4	4	4	4	3	Palm. Inteross.		
						———		
5	5	5	5	5	4	Flex. Long. Poll.		
5	5	5	5	5	4	Flex. Brev. Poll.		
5	4	4	4	4	4	Ext. Long Poll.		
5	4	4	4	4	4	Ext. Brev. Poll.		
5	4	4	4	4	4	Abd. Poll. Longus		
5	4	4	4	4	4	Abd. Poll. Brev.		
5	4	4	4	4	4	Add. Poll.		
5	5	5	5	4	4	Opponens Pollicis		
						———		

S BRASS. 156

LEFT LEG 20/3/39	14/3/39	14/2/39	14/1/39	8/12/38	4/11/38	DATE	RIGHT LEG 4/11/38	8/12/38	14/1/39	14/2/39	14/3/39	20/3/39
						MUSCLE POWER						
						Orbit						
						Facial						
						Mouth						
						Anterior Neck						
						Posterior Neck						
1	1	1	0	0	0	Back	0	0	0	1	1	1
						Respiration						
2	2	2	1	0	0	Quadratus Lumborum	0	0	1	1	1	1
1	1	1	1	1	0	Anterior Abdominals	0	1	1	1	1	1
0	0	0	0	0	0	Lateral Abdominals	0	0	0	0	0	0
						———						
1	1	1	1	1	0	Gluteus Maximus	2	2	2	2	2	2
2	2	1	1	0	0	Hip Flexors	1	1	1	2	2	2
2	2	1	1	0	0	Sartorius	1	1	1	2	2	2
1	1	1	1	0	0	Inward Rotation	1	1	2	2	2	2
1	1	1	1	0	0	Outward Rotation	1	1	2	2	2	2
1	1	1	1	1	0	Tensor Fasciæ Latæ	1	1	1	1	1	1
1	1	1	1	1	0	Hip Abductors	1	1	1	1	1	1
1	1	1	1	0	0	Hip Adductors	1	1	1	1	1	1
1	1	1	0	0	0	Quadriceps	0	1	1	1	1	1
0	0	0	0	0	0	Inner Hamstrings	0	2	2	2	2	2
0	0	0	0	0	0	Biceps	0	2	2	2	2	2
1	1	1	1	1	0	Gastrocnemius	1	2	1	1	1	1
1	1	1	0	0	0	Anterior Tibial	1	1	1	1	1	1
1	1	1	1	0	0	Posterior Tibial	1	1	1	1	1	1
3	3	3	2	1	0	Peroneals	2	3	3	3	3	3
1	1	1	1	1	0	Extensor Long. Digitorum	2	2	2	2	2	2
1	1	1	1	1	0	Extensor Prop. Hallucis	2	2	2	2	2	2
2	2	2	2	2	2	Flexor Long. Digitorum	3	3	3	3	3	3
2	2	2	2	2	2	Short Toe Flexors	3	3	3	3	3	3
2	2	2	2	2	2	Flexor Long. Hallucis	3	3	3	3	3	3
						———						
						LENGTH OF LIMB:						
						Ant. Sup. Spine to Int. Mall.						
						Knee to Mallcolus						
						———						

LEFT ARM 14/3/39	20/3/39	14/3/39	14/2/39	14/1/39	8/12/38	4/11/38	DATE	RIGHT ARM 4/11/38	8/12/38	14/1/39	14/2/39	14/3/39	20/3/39	14/3/39
							MUSCLE POWER							
0	0	0	0	0	0	0	Anterior Deltoid	0	0	0	0	0	0	0
0	0	0	0	0	0	0	Posterior Deltoid	0	0	0	0	0	0	0
0	0	0	0	0	0	0	Upper Trapezius	0	0	0	0	0	0	0
0	0	0	0	0	0	0	Mid. Trapezius	0	0	2	2	2	2	2
0	0	0	0	0	0	0	Low. Trapezius	0	0	2	2	2	2	2
0	0	0	0	0	0	0	Serratus Magnus	0	0	0	0	0	0	0
0	0	0	0	0	0	0	Rhomboids	0	0	0	0	0	0	0
0	0	0	0	0	0	0	Latissimus Dorsi	0	0	0	0	0	0	0
0	0	0	0	0	0	0	Pect. Major	0	0	0	0	0	0	0
0	0	0	0	0	0	0	Outward Rotators	0	0	0	0	0	0	0
0	0	0	0	0	0	0	Biceps	0	0	0	0	0	0	0
0	0	0	0	0	0	0	Triceps	0	0	0	0	0	0	0
0	0	0	0	0	0	0	Supinator	2	2	2	2	2	2	2
0	0	0	0	0	0	0	Pronators	1	1	1	1	1	1	1
0	0	0	0	0	0	0	Flexor Carpi Rad.	0	0	0	0	0	0	0
3	3	3	3	3	3	3	Flexor Carpi Uln.	0	0	0	0	0	0	0
2	2	2	1	1	0	0	Extensor Carpi Rad.	0	0	0	0	0	0	0
2	2	2	1	1	0	0	Extensor Carpi Uln.	0	0	0	0	0	0	0
3	3	2	2	2	2	2	Flex. Prof. Digit	0	0	0	0	0	0	0
0	0	0	0	0	0	0	Flex. Sub. Digit	0	0	0	0	0	0	0
2	2	2	1	1	0	0	Finger Ext.	0	0	0	0	0	0	0
1	1	1	1	1	1	1	Lumbricales	0	0	0	0	0	0	0
2	2	2	2	2	2	2	Dors. Inteross.	0	0	0	0	0	0	0
2	2	2	0	0	0	0	Abd. Min. Digit	0	0	0	0	0	0	0
2	2	2	2	2	2	0	Palm. Inteross.	0	0	0	0	0	0	0
							———							
2	2	2	2	2	1	0	Flex. Long. Poll.	0	0	1	1	1	1	1
0	0	0	0	0	0	0	Flex. Brev. Poll.	0	0	0	0	0	0	0
3	3	2	2	2	1	0	Ext. Long Poll.	0	0	0	1	1	1	1
0	0	0	0	0	0	0	Ext. Brev. Poll.	0	0	0	0	0	0	0
1	1	1	1	1	1	0	Abd. Poll. Longus	0	0	0	0	0	0	0
1	1	1	1	1	1	0	Abd. Poll. Brev.	0	0	0	0	0	0	0
3	3	3	3	3	3	2	Add. Poll.	0	0	0	0	0	0	0
1	1	1	1	1	1	0	Opponens Pollicis	0	0	0	0	0	0	0
							———							

2. CASES ADMITTED THREE MONTHS AFTER ACUTE STAGE

M. KERR 130

LEFT LEG 27/4/39	9/2/39	2/12/38	2/9/38	DATE	RIGHT LEG 2/9/38	12/12/38	1/2/39	27/4/39
				MUSCLE POWER				
				Orbit				
				Facial				
				Mouth				
				Anterior Neck				
				Posterior Neck				
3	3	3	3	Back	3	3	3	3
			N	Respiration	N			
2	2	2	1	Quadratus Lumborum	0	0	1	1
3	2	2	0	Anterior Abdominals	0	2	2	2
3	2	2	1	Lateral Abdominals	0	0	1	2
				———				
2	2	2	2	Gluteus Maximus	3	3	3	3
2	2	2	2	Hip Flexors	2	2	2	2
2	2	2	2	Sartorius	2	2	2	2
2	2	2	2	Inward Rotation	2	2	2	2
3	2	2	2	Outward Rotation	2	2	2	2
3	3	2	1	Tensor Fasciæ Latæ	2	3	3	3
3	3	2	1	Hip Abductors	2	3	3	3
2	2	2	1	Hip Adductors	2	2	2	2
2	2	2	2	Quadriceps	2	3	3	3
3	3	3	3	Inner Hamstrings	3	3	3	3
3	3	3	3	Biceps	3	3	3	3
3	2	2	2	Gastrocnemius	4	4	4	4
1	1	1	1	Anterior Tibial	3	4	4	4
3	2	2	2	Posterior Tibial	3	3	4	4
4	4	3	3	Peroneals	3	3	4	4
2	2	2	1	Extensor Long. Digitorum	4	4	4	4
3	2	1	1	Extensor Prop. Hallucis	3	3	3	3
3	3	2	2	Flexor Long. Digitorum	2	3	3	3
3	3	2	2	Short Toe Flexors	2	3	3	3
3	3	2	2	Flexor Long. Hallucis	2	3	3	3
				———				
				LENGTH OF LIMB:				
				Ant. Sup. Spine to Int. Mall.				
				Knee to Mallcolus				
				———				

LEFT ARM	DATE	RIGHT ARM
	MUSCLE POWER	
	Anterior Deltoid	
	Posterior Deltoid	
	Upper Trapezius	
	Mid. Trapezius	
	Low. Trapezius	
	Serratus Magnus	
	Rhomboids	
	Latissimus Dorsi	
	Pect. Major	
	Outward Rotators	
	Biceps	
	Triceps	
	Supinator	
	Pronators	
	Flexor Carpi Rad.	
	Flexor Carpi Uln.	
	Extensor Carpi Rad.	
	Extensor Carpi Uln.	
	Flex. Prof. Digit	
	Flex. Sub. Digit	
	Finger Ext.	
	Lumbricales	
	Dors. Inteross.	
	Abd. Min. Digit	
	Palm. Inteross.	
	———	
	Flex. Long. Poll.	
	Flex. Brev. Poll.	
	Ext. Long Poll.	
	Ext. Brev. Poll.	
	Abd. Poll. Longus	
	Abd. Poll. Brev.	
	Add. Poll.	
	Opponens Pollicis	
	———	

B. McLEOD. 117

LEFT LEG				DATE	RIGHT LEG
9/6/39	15/5/39	14/3/39	20/2/39		
				MUSCLE POWER	
				Orbit	
				Facial	
				Mouth	
				Anterior Neck	
				Posterior Neck	
3	3	3	3	Back	
				Respiration	
5	5	5	5	Quadratus Lumborum	
5	4	4	4	Anterior Abdominals	
4	4	3+	3	Lateral Abdominals	
				———	
3	3	2+	2	Gluteus Maximus	
4	4	3	3	Hip Flexors	
3+	3+	3	3	Sartorius	
3	3	2	2	Inward Rotation	
3	3	2	2	Outward Rotation	
3	3	2	2	Tensor Fasciæ Latæ	
2+	2+	2	2	Hip Abductors	
3	3	3	3	Hip Abductors	
4	4	3+	3	Quadriceps	
2+	2+	2+	2	Inner Hamstrings	
1	1	1	1	Biceps	
0	0	0	0	Gastrocnemius	
0	0	0	0	Anterior Tibial	
0	0	0	0	Posterior Tibial	
3+	3+	3+	3	Peroneals	
0	0	0	0	Extensor Long. Digitorum	
0	0	0	0	Extensor Prop. Hallucis	
1	1	0	0	Flexor Long. Digitorum	
0	0	0	0	Short Toe Flexors	
0	0	0	0	Flexor Long. Hallucis	
				———	
				LENGTH OF LIMB:	
				Ant. Sup. Spine to Int. Mall.	
				Knee to Mallcolus	
				———	

LEFT ARM	DATE	RIGHT ARM
	MUSCLE POWER	
	Anterior Deltoid	
	Posterior Deltoid	
	Upper Trapezius	
	Mid. Trapezius	
	Low. Trapezius	
	Serratus Magnus	
	Rhomboids	
	Latissimus Dorsi	
	Pect. Major	
	Outward Rotators	
	Biceps	
	Triceps	
	Supinator	
	Pronators	
	Flexor Carpi Rad.	
	Flexor Carpi Uln.	
	Extensor Carpi Rad.	
	Extensor Carpi Uln.	
	Flex. Prof. Digit	
	Flex. Sub. Digit	
	Finger Ext.	
	Lumbricales	
	Dors. Inteross.	
	Abd. Min. Digit	
	Palm. Inteross.	
	———	
	Flex. Long. Poll.	
	Flex. Brev. Poll.	
	Ext. Long Poll.	
	Ext. Brev. Poll.	
	Abd. Poll. Longus	
	Abd. Poll. Brev.	
	Add. Poll.	
	Opponens Pollicis	
	———	

1 McDONALD 112

LEFT LEG	DATE	RIGHT LEG
	MUSCLE POWER	
	Orbit	
	Facial	
	Mouth	
	Anterior Neck	
	Posterior Neck	
	Back	
	Respiration	
	Quadratus Lumborum	
	Anterior Abdominals	
	Lateral Abdominals	
	———	
	Gluteus Maximus	
	Hip Flexors	
	Sartorius	
	Inward Rotation	
	Outward Rotation	
	Tensor Fasciæ Latæ	
	Hip Abductors	
	Hip Abductors	
	Quadriceps	
	Inner Hamstrings	
	Biceps	
	Gastrocnemius	
	Anterior Tibial	
	Posterior Tibial	
	Peroneals	
	Extensor Long. Digitorum	
	Extensor Prop. Hallucis	
	Flexor Long. Digitorum	
	Short Toe Flexors	
	Flexor Long. Hallucis	
	———	
	LENGTH OF LIMB:	
	Ant. Sup. Spine to Int. Mall.	
	Knee to Mallcolus	
	———	

LEFT ARM 7/XI/38	10/IX/38	13/VII/38	14/V/38	DATE	RIGHT ARM 14/V/38	13/VII/38	14/IX/38	7/XI/38
				MUSCLE POWER				
0	0	0	0	Anterior Deltoid	2	4	4	4
0	0	0	0	Posterior Deltoid	3	3	3	4
0	2	0	0	Upper Trapezius	2	2	2	2
0	2	0	0	Mid. Trapezius	2	2	2	2
0	2	0	0	Low. Trapezius	1	2	2	2
0	0	2	0	Serratus Magnus	1	2	2	3
0	2	0	0	Rhomboids	3	3	3	3
0	0	0	0	Latissimus Dorsi	3	3	3	4
0	0	0	0	Pect. Major	1	2	2	3
0	0	0	0	Outward Rotators	2	2	4	4
0	0	0	0	Biceps	2	3	3	3
0	0	0	0	Triceps	1	3	3	3
0	0	0	0	Supinator	1	2	2	3
0	0	0	0	Pronators	3	4	4	4
0	0	0	0	Flexor Carpi Rad.	2	2	2	3
0	0	0	0	Flexor Carpi Uln.	2	2	2	3
0	0	0	0	Extensor Carpi Rad.	2	2	2	3
0	0	0	0	Extensor Carpi Uln.	2	2	2	3
1	0	0	0	Flex. Prof. Digit	5	4	5	5
1	0	0	0	Flex. Sub. Digit	5	4	5	5
0	0	0	0	Finger Ext.	4	5	5	5
0	0	0	0	Lumbricales				
0	0	0	0	Dors. Inteross.	5	4	4	5
0	0	0	0	Abd. Min. Digit	5	4	4	5
0	0	0	0	Palm. Inteross.	5	4	4	5
				———				
0	0	0	0	Flex. Long. Poll.	4	4	5	5
0	0	0	0	Flex. Brev. Poll.	4	4	5	5
0	0	0	0	Ext. Long Poll.	4	4	5	5
0	0	0	0	Ext. Brev. Poll.	4	4	5	5
0	0	0	0	Abd. Poll. Longus	4	5	5	5
0	0	0	0	Abd. Poll. Brev.	4	5	5	5
0	0	0	0	Add. Poll.	5	5	5	5
0	0	0	0	Opponens Pollicis	5	5	5	5
				———				

S. Sharpe 76

LEFT LEG	DATE	RIGHT LEG 9/12/37	2/12/38	1/4/38	23/5/38
	MUSCLE POWER				
	Orbit				
	Facial				
	Mouth				
	Anterior Neck				
	Posterior Neck				
	Back	4	4	5	5
	Respiration				
	Quadratus Lumborum	4	4	5	5
	Anterior Abdominals	4	4	4	5
	Lateral Abdominals	4	4	4	5
	———				
	Gluteus Maximus	1	3	3	4
	Hip Flexors	3	3	4	4
	Sartorius	3	3	4	4
	Inward Rotation	1	2	2	2
	Outward Rotation	3	3	3	3
	Tensor Fasciæ Latæ	1	3	3	3
	Hip Abductors	1	3	3	3
	Hip Adductors	3	3	3	3
	Quadriceps	3	4	4	4
	Inner Hamstrings	3	4	3	4
	Biceps	3	4	3	4
	Gastrocnemius	3	3	3	3
	Anterior Tibial	1	3	3	3
	Posterior Tibial	2	3	3	3
	Peroneals	3	4	4	4
	Extensor Long. Digitorum	3	3	4	4
	Extensor Prop. Hallucis	4	4	5	5
	Flexor Long. Digitorum	3	3	4	4
	Short Toe Flexors	3	3	4	4
	Flexor Long. Hallucis	3	3	4	4
	———				
	LENGTH OF LIMB:				
	Ant. Sup. Spine to Int. Mall.				
	Knee to Mallcolus				
	———				

LEFT ARM	DATE	RIGHT ARM
	MUSCLE POWER	
	Anterior Deltoid	
	Posterior Deltoid	
	Upper Trapezius	
	Mid. Trapezius	
	Low. Trapezius	
	Serratus Magnus	
	Rhomboids	
	Latissimus Dorsi	
	Pect. Major	
	Outward Rotators	
	Biceps	
	Triceps	
	Supinator	
	Pronators	
	Flexor Carpi Rad.	
	Flexor Carpi Uln.	
	Extensor Carpi Rad.	
	Extensor Carpi Uln.	
	Flex. Prof. Digit	
	Flex. Sub. Digit	
	Finger Ext.	
	Lumbricales	
	Dors. Inteross.	
	Abd. Min. Digit	
	Palm. Inteross.	
	———	
	Flex. Long. Poll.	
	Flex. Brev. Poll.	
	Ext. Long Poll.	
	Ext. Brev. Poll.	
	Abd. Poll. Longus	
	Abd. Poll. Brev.	
	Add. Poll.	
	Opponens Pollicis	
	———	

M. Morgan 92.

LEFT LEG 2/5/39	LEFT LEG 25/11/39	LEFT LEG 26/11/39	LEFT LEG 26/1/39	DATE	RIGHT LEG
				MUSCLE POWER	
				Orbit	
				Facial	
				Mouth	
				Anterior Neck	
				Posterior Neck	
5	5	5	5	Back	
				Respiration	
5	5	5	5	Quadratus Lumborum	
4	4	4	4	Anterior Abdominals	
5	5	5	5	Lateral Abdominals	
				———	
4	4	4	4	Gluteus Maximus	
5	5	5	5	Hip Flexors	
5	5	5	5	Sartorius	
5	5	5	5	Inward Rotation	
5	5	5	5	Outward Rotation	
5	5	5	5	Tensor Fasciæ Latæ	
5	5	5	5	Hip Abductors	
5	5	5	5	Hip Adductors	
4	4	4	4	Quadriceps	
4	4	4	4	Inner Hamstrings	
4	4	4	4	Biceps	
4	4	4	4	Gastrocnemius	
3	3	2	2	Anterior Tibial	
3	3	2	2	Posterior Tibial	
2	2	2	1	Peroneals	
3	3	3	3	Extensor Long. Digitorum	
4	4	3	3	Extensor Prop. Hallucis	
4	4	4	4	Flexor Long. Digitorum	
4	4	4	4	Short Toe Flexors	
4	4	4	4	Flexor Long. Hallucis	
				———	
				LENGTH OF LIMB:	
				Ant. Sup. Spine to Int. Mall.	
				Knee to Mallcolus	
				———	

LEFT ARM	DATE	RIGHT ARM
	MUSCLE POWER	
	Anterior Deltoid	
	Posterior Deltoid	
	Upper Trapezius	
	Mid. Trapezius	
	Low. Trapezius	
	Serratus Magnus	
	Rhomboids	
	Latissimus Dorsi	
	Pect. Major	
	Outward Rotators	
	Biceps	
	Triceps	
	Supinator	
	Pronators	
	Flexor Carpi Rad.	
	Flexor Carpi Uln.	
	Extensor Carpi Rad.	
	Extensor Carpi Uln.	
	Flex. Prof. Digit	
	Flex. Sub. Digit	
	Finger Ext.	
	Lumbricales	
	Dors. Inteross.	
	Abd. Min. Digit	
	Palm. Inteross.	
	———	
	Flex. Long. Poll.	
	Flex. Brev. Poll.	
	Ext. Long Poll.	
	Ext. Brev. Poll.	
	Abd. Poll. Longus	
	Abd. Poll. Brev.	
	Add. Poll.	
	Opponens Pollicis	
	———	

E. SPOWART 77

LEFT LEG	DATE	RIGHT LEG 26/I/37	5/III/37	23/II/38	18/III/38
	MUSCLE POWER				
	Orbit				
	Facial				
	Mouth				
	Anterior Neck				
	Posterior Neck				
	Back				
	Respiration				
	Quadratus Lumborum				
	Anterior Abdominals				
	Lateral Abdominals				
	Gluteus Maximus	3	4	4	4
	Hip Flexors	3	4	4	4
	Sartorius	3	4	4	4
	Inward Rotation	3	4	4	4
	Outward Rotation	3	4	4	4
	Tensor Fasciæ Latæ	3	4	3	3
	Hip Abductors	3	4	3	3
	Hip Adductors	3	4	4	4
	Quadriceps	3	4	4	
	Inner Hamstrings	3	4	4	4
	Biceps	3	4	4	4
	Gastrocnemius	3	4	4	4
	Anterior Tibial	0	0	1	1
	Posterior Tibial	0	1	2	2
	Peroneals	2	0	2	3
	Extensor Long. Digitorum	0	3	2	2
	Extensor Prop. Hallucis	0	1	1	1
	Flexor Long. Digitorum	3	4	4	4
	Short Toe Flexors	3	4	4	4
	Flexor Long. Hallucis	3	4	4	4
	LENGTH OF LIMB:				
	Ant. Sup. Spine to Int. Mall.				
	Knee to Mallcolus				

LEFT ARM	DATE	RIGHT ARM
	MUSCLE POWER	
	Anterior Deltoid	
	Posterior Deltoid	
	Upper Trapezius	
	Mid. Trapezius	
	Low. Trapezius	
	Serratus Magnus	
	Rhomboids	
	Latissimus Dorsi	
	Pect. Major	
	Outward Rotators	
	Biceps	
	Triceps	
	Supinator	
	Pronators	
	Flexor Carpi Rad.	
	Flexor Carpi Uln.	
	Extensor Carpi Rad.	
	Extensor Carpi Uln.	
	Flex. Prof. Digit	
	Flex. Sub. Digit	
	Finger Ext.	
	Lumbricales	
	Dors. Inteross.	
	Abd. Min. Digit	
	Palm. Inteross.	
	Flex. Long. Poll.	
	Flex. Brev. Poll.	
	Ext. Long Poll.	
	Ext. Brev. Poll.	
	Abd. Poll. Longus	
	Abd. Poll. Brev.	
	Add. Poll.	
	Opponens Pollicis	

S WALKER 74

LEFT LEG				DATE	RIGHT LEG			
14/4/38	2/2/38	16/12/37	12/1/37		12/1/37	12/12/37	17/2/38	17/4/38
				MUSCLE POWER				
				Orbit				
				Facial				
				Mouth				
				Anterior Neck				
				Posterior Neck				
5	4	4	4	Back	4	4	4	4
				Respiration				
5	4	4	4	Quadratus Lumborum	4	4	4	4
5	4	4	4	Anterior Abdominals	4	4	4	4
5	4	4	4	Lateral Abdominals	4	4	4	4
				———				
5	4	4	3	Gluteus Maximus	1	3	3	3
5	4	4	3	Hip Flexors	1	2	2	3
5	4	4	3	Sartorius	1	2	2	3
5	4	4	3	Inward Rotation	1	1	1	1
5	4	4	3	Outward Rotation	1	2	2	2
5	4	4	3	Tensor Fasciæ Latæ	1	2	2	2
5	4	4	3	Hip Abductors	1	2	2	2
5	4	4	3	Hip Adductors	1	1	1	2
5	4	4	3	Quadriceps	0	1	1	1
5	4	4	3	Inner Hamstrings	1	3	3	3
5	4	4	3	Biceps	1	3	3	3
5	4	4	3	Gastrocnemius	0	1	2	2
5	4	4	3	Anterior Tibial	0	1	1	1
5	4	4	3	Posterior Tibial	0	1	1	1
5	4	4	3	Peroneals	0	1	1	3
5	4	4	3	Extensor Long. Digitorum	0	3	3	3
5	4	4	3	Extensor Prop. Hallucis	0	3	3	4
5	4	4	3	Flexor Long. Digitorum	1	3	3	3
5	4	4	3	Short Toe Flexors	1	3	3	3
5	4	4	3	Flexor Long. Hallucis	1	3	3	3
				———				
				LENGTH OF LIMB:				
				Ant. Sup. Spine to Int. Mall.				
				Knee to Mallcolus				
				———				

LEFT ARM	DATE	RIGHT ARM
	MUSCLE POWER	
	Anterior Deltoid	
	Posterior Deltoid	
	Upper Trapezius	
	Mid. Trapezius	
	Low. Trapezius	
	Serratus Magnus	
	Rhomboids	
	Latissimus Dorsi	
	Pect. Major	
	Outward Rotators	
	Biceps	
	Triceps	
	Supinator	
	Pronators	
	Flexor Carpi Rad.	
	Flexor Carpi Uln.	
	Extensor Carpi Rad.	
	Extensor Carpi Uln.	
	Flex. Prof. Digit	
	Flex. Sub. Digit	
	Finger Ext.	
	Lumbricales	
	Dors. Inteross.	
	Abd. Min. Digit	
	Palm. Inteross.	
	———	
	Flex. Long. Poll.	
	Flex. Brev. Poll.	
	Ext. Long Poll.	
	Ext. Brev. Poll.	
	Abd. Poll. Longus	
	Abd. Poll. Brev.	
	Add. Poll.	
	Opponens Pollicis	
	———	

F. WALKER 81.

LEFT LEG 21/11/38	24/3/38	12/2/38	29/9/37	DATE	RIGHT LEG 29/9/37	12/2/38	24/3/38	21/11/38
				MUSCLE POWER				
				Orbit				
				Facial				
				Mouth				
				Anterior Neck				
				Posterior Neck				
5	5	5	4	Back	4	5	5	5
				Respiration				
5	5	5	4	Quadratus Lumborum	4	5	5	5
5	5	5	4	Anterior Abdominals	4	5	5	5
5	5	5	4	Lateral Abdominals	4	5	5	5
5	5	5	4	Gluteus Maximus	4	4	4	5
5	5	5	4	Hip Flexors	4	4	4	5
5	5	5	4	Sartorius	4	4	4	5
5	5	5	4	Inward Rotation	4	4	4	5
5	5	5	4	Outward Rotation	4	4	4	5
5	5	5	4	Tensor Fasciæ Latæ	3	4	4	5
5	5	5	4	Hip Abductors	3	4	4	5
5	5	5	4	Hip Adductors	4	4	4	5
5	5	5	4	Quadriceps	3	4	4	4
5	5	5	4	Inner Hamstrings	3	4	4	4
5	5	5	4	Biceps	3	4	4	4
5	5	5	4	Gastrocnemius	3	4	4	5
5	4	4	3	Anterior Tibial	3	3	4	4
5	5	4	4	Posterior Tibial	3	4	4	4
5	4	4	4	Peroneals	3	4	4	5
5	5	4	4	Extensor Long. Digitorum	3	4	4	4
5	5	4	4	Extensor Prop. Hallucis	3	4	4	4
5	5	4	4	Flexor Long. Digitorum	3	4	4	4
5	5	4	4	Short Toe Flexors	3	4	4	4
5	5	4	4	Flexor Long. Hallucis	3	4	4	4
				LENGTH OF LIMB:				
				Ant. Sup. Spine to Int. Mall.				
				Knee to Mallcolus				

LEFT ARM	DATE	RIGHT ARM
	MUSCLE POWER	
	Anterior Deltoid	
	Posterior Deltoid	
	Upper Trapezius	
	Mid. Trapezius	
	Low. Trapezius	
	Serratus Magnus	
	Rhomboids	
	Latissimus Dorsi	
	Pect. Major	
	Outward Rotators	
	Biceps	
	Triceps	
	Supinator	
	Pronators	
	Flexor Carpi Rad.	
	Flexor Carpi Uln.	
	Extensor Carpi Rad.	
	Extensor Carpi Uln.	
	Flex. Prof. Digit	
	Flex. Sub. Digit	
	Finger Ext.	
	Lumbricales	
	Dors. Inteross.	
	Abd. Min. Digit	
	Palm. Inteross.	
	Flex. Long. Poll.	
	Flex. Brev. Poll.	
	Ext. Long Poll.	
	Ext. Brev. Poll.	
	Abd. Poll. Longus	
	Abd. Poll. Brev.	
	Add. Poll.	
	Opponens Pollicis	

G JOHNSTONE 79

LEFT LEG 27/IV/38	LEFT LEG 1/11/38	LEFT LEG 28/IV/37	DATE	RIGHT LEG 29/IV/37	RIGHT LEG 1/11/38	RIGHT LEG 27/IV/38.
			MUSCLE POWER			
			Orbit			
			Facial			
			Mouth			
			Anterior Neck			
			Posterior Neck			
			Back			
			Respiration			
			Quadratus Lumborum			
			Anterior Abdominals			
			Lateral Abdominals			
4+	4	3	Gluteus Maximus	3	4	4
4+	4	3	Hip Flexors	2	4	4
4+	4	3	Sartorius	2	4	4
4+	4	3	Inward Rotation	2	4	4
4+	4	4	Outward Rotation	3	4	4
4+	4	3	Tensor Fasciæ Latæ	2	4	4
4+	4	3	Hip Abductors	2	4	4
4+	4	4	Hip Adductors	3	4	4
4	4	4	Quadriceps	2	4	4
4	4	3	Inner Hamstrings	3	4	4
4	4	3	Biceps	3	4	4
4	4	2	Gastrocnemius	1	4	4
4	4	1	Anterior Tibial	2	3	3
4	4	1	Posterior Tibial	1	3	3
4	4	1	Peroneals	1	4	4
4	4	3	Extensor Long. Digitorum	1	4	4
4	4	3	Extensor Prop. Hallucis	1	4	4
4	4	3	Flexor Long. Digitorum	3	4	4
4	4	3	Short Toe Flexors	3	4	4
4	4	3	Flexor Long. Hallucis	3	4	4
			LENGTH OF LIMB:			
			Ant. Sup. Spine to Int. Mall.			
			Knee to Mallcolus			

LEFT ARM	DATE	RIGHT ARM
	MUSCLE POWER	
	Anterior Deltoid	
	Posterior Deltoid	
	Upper Trapezius	
	Mid. Trapezius	
	Low. Trapezius	
	Serratus Magnus	
	Rhomboids	
	Latissimus Dorsi	
	Pect. Major	
	Outward Rotators	
	Biceps	
	Triceps	
	Supinator	
	Pronators	
	Flexor Carpi Rad.	
	Flexor Carpi Uln.	
	Extensor Carpi Rad.	
	Extensor Carpi Uln.	
	Flex. Prof. Digit	
	Flex. Sub. Digit	
	Finger Ext.	
	Lumbricales	
	Dors. Inteross.	
	Abd. Min. Digit	
	Palm. Inteross.	
	Flex. Long. Poll.	
	Flex. Brev. Poll.	
	Ext. Long Poll.	
	Ext. Brev. Poll.	
	Abd. Poll. Longus	
	Abd. Poll. Brev.	
	Add. Poll.	
	Opponens Pollicis	

S. BROWN. 75

LEFT LEG 30/4/39	15/3/38	15/12/37	15/12/36	DATE	RIGHT LEG 15/12/36	15/12/37	15/12/38	30/4/38
				MUSCLE POWER				
				Orbit				
				Facial				
				Mouth				
				Anterior Neck				
5	4	4	3	Posterior Neck	3	4	4	5
5	4	4	3	Back	3	4	4	5
				Respiration				
5	4	4	3	Quadratus Lumborum	3	4	4	5
5	4	4	3	Anterior Abdominals	3	4	4	5
5	4	4	3	Lateral Abdominals	3	4	4	5
				———				
5	4	4	4	Gluteus Maximus	1	4	4	4
5	4	4	4	Hip Flexors	1	4	4	4
5	4	4	4	Sartorius	1	4	4	4
5	4	4	4	Inward Rotation	0	4	4	4
5	4	4	4	Outward Rotation	1	4	4	4
5	4	4	4	Tensor Fasciæ Latæ	1	4	4	4
5	4	4	4	Hip Abductors	1	4	4	4
5	4	4	4	Hip Adductors	1	4	4	4
5	4	4	4	Quadriceps	1	2	3	4
5	4	4	4	Inner Hamstrings	1	4	4	4
5	4	4	4	Biceps	1	4	4	4
5	4	4	4	Gastrocnemius	1		3	3
4	4	4	3	Anterior Tibial	0	0	0	0
4	4	4	4	Posterior Tibial	0	1	1	1
5	4	4	4	Peroneals	0	1	1	1
4	4	4	4	Extensor Long. Digitorum	0	2	3	3
5	4	4	4	Extensor Prop. Hallucis	0	2	3	3
5	4	4	4	Flexor Long. Digitorum	1	2	3	4
5	4	4	4	Short Toe Flexors	1	2	3	4
5	4	4	4	Flexor Long. Hallucis	1	2	3	4
				———				
				LENGTH OF LIMB:				
				Ant. Sup. Spine to Int. Mall.				
				Knee to Mallcolus				
				———				

LEFT ARM	DATE	RIGHT ARM
	MUSCLE POWER	
	Anterior Deltoid	
	Posterior Deltoid	
	Upper Trapezius	
	Mid. Trapezius	
	Low. Trapezius	
	Serratus Magnus	
	Rhomboids	
	Latissimus Dorsi	
	Pect. Major	
	Outward Rotators	
	Biceps	
	Triceps	
	Supinator	
	Pronators	
	Flexor Carpi Rad.	
	Flexor Carpi Uln.	
	Extensor Carpi Rad.	
	Extensor Carpi Uln.	
	Flex. Prof. Digit	
	Flex. Sub. Digit	
	Finger Ext.	
	Lumbricales	
	Dors. Inteross.	
	Abd. Min. Digit	
	Palm. Inteross.	
	———	
	Flex. Long. Poll.	
	Flex. Brev. Poll.	
	Ext. Long Poll.	
	Ext. Brev. Poll.	
	Abd. Poll. Longus	
	Abd. Poll. Brev.	
	Add. Poll.	
	Opponens Pollicis	
	———	

B MORTON. 37.

LEFT LEG 16/XII/38	18/X/38	18/X/38	17/X/38	10/XII/37	2/VIII/37	DATE	RIGHT LEG 3/VIII/37	10/XII/37	17/X/38	15/X/38	18/X/38	16/XII/38
						MUSCLE POWER						
						Orbit						
						Facial						
						Mouth						
						Anterior Neck						
						Posterior Neck						
3	3	3	3	3	3	Back	3	3	3	3	3	3
						Respiration						
3	3	3	3	3	3	Quadratus Lumborum	3	3	3	3	3	3
3	3	3	3	3	3	Anterior Abdominals	3	3	3	3	3	3
3	3	3	3	3	3	Lateral Abdominals	3	3	3	3	3	3
						———						
1	1	1	1	1	1	Gluteus Maximus	3	3	3	3	3	3
2	2	2	2	1	0	Hip Flexors	2	2	2	2	2	2
						Sartorius						
0	0	0	0	0	0	Inward Rotation	2	2	2	2	2	2
0	0	0	0	0	0	Outward Rotation	2	3	3	3	3	3
1	1	1	1	1	1	Tensor Fasciæ Latæ	3	3	3	3	3	3
1	1	1	1	1	1	Hip Abductors	3	3	3	3	3	3
2	2	2	2	2	1	Hip Adductors	2	2	2	2	2	2
2	2	2	1	1	1	Quadriceps	3	3	3	3	3	3
2	2	ϕ	ϕ	1	0	Inner Hamstrings	2	2	3	3	3	3
2	2	ϕ	ϕ	1	0	Biceps	2	2	3	3	3	3
0	0	0	0	1	0	Gastrocnemius	3	4	4	4	4	4
0	0	0	0	0	0	Anterior Tibial	3	3	3	3	3	3
0	0	0	0	0	0	Posterior Tibial	3	3	3	3	3	3
0	0	0	0	0	0	Peroneals	3	4	4	4	4	4
1	1	1	1	2	1	Extensor Long. Digitorum	4	4	4	4	4	4
1	1	1	1	1	1	Extensor Prop. Hallucis	4	4	4	4	4	4
1	1	1	1	2	0	Flexor Long. Digitorum	4	4	4	4	4	4
						Short Toe Flexors						
						Flexor Long. Hallucis						
						———						
						LENGTH OF LIMB:						
						Ant. Sup. Spine to Int. Mall.						
						Knee to Mallcolus						
						———						

LEFT ARM 16/XII/38	18/X/38	18/X/38	17/X/38	10/XII/37	2/VIII/37	DATE	RIGHT ARM
						MUSCLE POWER	
						Anterior Deltoid	
						Posterior Deltoid	
						Upper Trapezius	
						Mid. Trapezius	
						Low. Trapezius	
						Serratus Magnus	
						Rhomboids	
						Latissimus Dorsi	
						Pect. Major	
						Outward Rotators	
						Biceps	
						Triceps	
						Supinator	
						Pronators	
						Flexor Carpi Rad.	
						Flexor Carpi Uln.	
						Extensor Carpi Rad.	
						Extensor Carpi Uln.	
						Flex. Prof. Digit	
						Flex. Sub. Digit	
						Finger Ext.	
						Lumbricales	
						Dors. Inteross.	
						Abd. Min. Digit	
						Palm. Inteross.	
						———	
						Flex. Long. Poll.	
						Flex. Brev. Poll.	
						Ext. Long Poll.	
						Ext. Brev. Poll.	
						Abd. Poll. Longus	
						Abd. Poll. Brev.	
						Add. Poll.	
						Opponens Pollicis	
						———	

R Mike 80

LEFT LEG						DATE	RIGHT LEG					
20/IV/39	2/III/38	25/VII/38	12/IV/38	16/II/38	13/VIII/37		13/VIII/37	6/II/38	12/IV/38	25/VII/38	2/III/38	20/IV/39
						MUSCLE POWER						
						Orbit						
						Facial						
						Mouth						
						Anterior Neck						
						Posterior Neck						
4	4	4	4	3	3	Back	3	3	4	4	4	4
						Respiration						
3	3	3	3	3	3	Quadratus Lumborum	3	3	3	3	3	3
4	4	4	4	4	3	Anterior Abdominals	3	4	4	4	4	4
4	4	4	3	3	2	Lateral Abdominals	2	3	3	3/4	4	4
						———						
1	1	1	1	1	1	Gluteus Maximus	3	3	3	3	3	4
3+	3+	3+	3+	3	2	Hip Flexors	3	3	4	4	4	4
3	3	3	3	3	2	Sartorius	3	3	4	4	4	4
0	0	0	0	0	0	Inward Rotation	3	3	3	3	3	3
3	3	3	3	2	1	Outward Rotation	3	3	3	3	3	3
2	2	2	2	2	2	Tensor Fasciæ Latæ	3	3	3	3	3	3
2	2	2	2	2	2	Hip Abductors	3	3	3	3	3	3
1	1	1	1	1	1	Hip Adductors	1	3	3	3	3	3
1	1	1	1	1	0	Quadriceps	3	3	4	4	4	4
1	1	1	1	1	1	Inner Hamstrings	3	3	3	3	3	3
1	1	1	1	1	1	Biceps	3	3	3	3	3	3
0	0	0	0	0	0	Gastrocnemius	3	2	3	3	3	3
0	0	0	0	0	0	Anterior Tibial	2	3	4	4	4	4
0	0	0	0	0	0	Posterior Tibial	2	3	3	3	3	3
0	0	0	0	0	0	Peroneals	3	4	4	4	4	4
0	0	0	0	0	0	Extensor Long. Digitorum	3	4	4	4	4	4
0	0	0	0	0	0	Extensor Prop. Hallucis	3	4	4	4	4	4
3	3	3	3	3	2	Flexor Long. Digitorum	3	4	4	4	4	4
3	3	3	3	3	2	Short Toe Flexors	3	4	4	4	4	4
3	3	3	3	3	2	Flexor Long. Hallucis	3	4	4	4	4	4
						———						
						LENGTH OF LIMB:						
						Ant. Sup. Spine to Int. Mall.						
						Knee to Mallcolus						
						———						

LEFT ARM	DATE	RIGHT ARM
	MUSCLE POWER	
	Anterior Deltoid	
	Posterior Deltoid	
	Upper Trapezius	
	Mid. Trapezius	
	Low. Trapezius	
	Serratus Magnus	
	Rhomboids	
	Latissimus Dorsi	
	Pect. Major	
	Outward Rotators	
	Biceps	
	Triceps	
	Supinator	
	Pronators	
	Flexor Carpi Rad.	
	Flexor Carpi Uln.	
	Extensor Carpi Rad.	
	Extensor Carpi Uln.	
	Flex. Prof. Digit	
	Flex. Sub. Digit	
	Finger Ext.	
	Lumbricales	
	Dors. Inteross.	
	Abd. Min. Digit	
	Palm. Inteross.	
	———	
	Flex. Long. Poll.	
	Flex. Brev. Poll.	
	Ext. Long Poll.	
	Ext. Brev. Poll.	
	Abd. Poll. Longus	
	Abd. Poll. Brev.	
	Add. Poll.	
	Opponens Pollicis	
	———	

J. McDONALD 149

LEFT LEG 21/7/39 3/3/39 5/12/38 4/5/38 6/6/38 19/5/38 21/2/38 17/12/38 3/3/37	DATE	RIGHT LEG 5/12/37 12/12/38 21/2/38 4/4/38 6/6/38 4/8/38 5/12/38 9/3/39 21/7/39
	MUSCLE POWER	
	Orbit	
	Facial	
	Mouth	
	Anterior Neck	
	Posterior Neck	
3 3 3 2 2 2 2 2 0	Back	0 1 1 1 3 3 3 3 3
	Respiration	
3 3 3 3 3 3 2 1 0	Quadratus Lumborum	0 1 1 1 3 3 3 3 3
3 3 3 3 3 3 1 1 1	Anterior Abdominals	1 1 2 2 3 3 3 3 3
3 3 3 3 3 3 1 1 0	Lateral Abdominals	0 1 2 2 2 2 2 2 2
	———	
4 4 4 3 3 3 3 3 1	Gluteus Maximus	0 0 0 0 0 0 0 0 0
4 4 4 3 3 3 3 3 1	Hip Flexors	0 0 1 1 1 1 1 1 1
4 4 4 3 3 3 3 3 1	Sartorius	0 0 1 1 1 1 1 1 1
4 4 4 3 3 3 3 3 1	Inward Rotation	0 0 0 0 0 0 0 0 0
4 4 4 3 3 3 3 3 1	Outward Rotation	0 0 0 0 0 0 0 0 0
4 4 4 3 3 3 3 3 1	Tensor Fasciæ Latæ	0 0 1 1 1 1 1 1 1
4 4 4 3 3 3 3 3 1	Hip Abductors	0 0 1 1 1 1 1 1 1
4 4 4 3 3 3 3 3 1	Hip Abductors	0 0 0 0 0 0 0 0 0
4 4 4 4 4 3 3 3 1	Quadriceps	1 0 0 0 0 0 0 0 0
4 4 4 4 4 3 3 3 1	Inner Hamstrings	1 1 1 1 1 1 1 1 1
4 4 4 4 4 3 3 3 1	Biceps	1 1 1 1 1 1 1 1 1
4 4 4 3 3 3 3 3 1	Gastrocnemius	0 1 2 2 2 2 2 2 2
3 3 3 3 3 3 3 3 1	Anterior Tibial	1 1 1 1 1 1 1 1 1
3 3 3 3 3 3 3 3 1	Posterior Tibial	0 1 1 1 1 1 1 1 1
3 2 2 2 2 1 1 1 1	Peroneals	0 0 0 0 0 0 0 0 0
3 3 3 3 3 3 3 3 1	Extensor Long. Digitorum	0 1 1 1 1 1 1 1 1
3 3 3 3 3 3 3 3 1	Extensor Prop. Hallucis	0 1 1 1 1 1 1 1 1
3 3 3 3 3 3 3 3 1	Flexor Long. Digitorum	0 2 2 2 2 2 2 2 2
3 3 3 3 3 3 3 3 1	Short Toe Flexors	0 2 2 2 2 2 2 2 2
3 3 3 3 3 3 3 3 1	Flexor Long. Hallucis	0 2 2 2 2 2 2 2 2
	———	
	LENGTH OF LIMB:	
	Ant. Sup. Spine to Int. Mall.	
	Knee to Mallcolus	
	———	

LEFT ARM 21/7/39 4/5/39 5/12/38 4/5/38 6/6/38 4/4/38 21/2/38 17/12/38 3/3/37	DATE	RIGHT ARM 2/7/37 17/12/38 21/2/38 4/4/38 6/6/38 4/8/38 5/12/38 9/3/39 21/7/39
	MUSCLE POWER	
3 3 3 3 2 2 2 1 0	Anterior Deltoid	4 4 4 4 5 5 5 5
3 3 3 2 2 2 2 1 1	Posterior Deltoid	4 4 4 4 5 5 5 5
3 3 3 3 3 3 3 1 1	Upper Trapezius	2 3 3 3 3 3 3 4 4
3 3 3 3 3 3 3 1 1	Mid. Trapezius	2 3 3 3 3 3 3 4 4
3 3 3 3 3 3 3 1 1	Low. Trapezius	2 3 3 3 3 3 3 4 4
3 3 3 1 1 1 1 1 0	Serratus Magnus	2 3 3 3 3 3 3 4 4
2 2 2 1 1 1 1 1 1	Rhomboids	2 3 3 3 3 3 3 3 3
3 3 3 3 3 2 2 1 0	Latissimus Dorsi	2 4 4 4 4 5 5 5 5
3 3 3 3 3 3 3 1 0	Pect. Major	1 4 4 4 4 5 5 5 5
3 3 3 3 3 3 3 1 0	Outward Rotators	2 4 4 4 4 5 5 5 5
4 4 4 4 3 3 3 2 1	Biceps	2 4 4 4 4 5 5 5 5
3 3 3 3 3 2 2 2 1	Triceps	2 4 4 4 4 5 5 5 5
3 3 3 3 3 3 3 2 1	Supinator	2 4 4 4 4 5 5 5 5
3 3 3 3 3 3 3 3 1	Pronators	2 4 4 4 4 5 5 5 5
4 4 4 4 4 3 3 2 1	Flexor Carpi Rad.	2 4 4 4 4 5 5 5 5
4 4 4 4 4 3 3 2 1	Flexor Carpi Uln.	2 4 4 4 4 5 5 5 5
4 4 4 4 4 4 4 2 1	Extensor Carpi Rad.	2 4 4 4 4 5 5 5 5
4 4 4 4 4 4 4 2 1	Extensor Carpi Uln.	2 4 4 4 4 5 5 5 5
4 4 4 4 4 4 4 2 1	Flex. Prof. Digit	2 4 4 4 4 5 5 5 5
4 4 4 4 4 4 4 2 1	Flex. Sub. Digit	2 4 4 4 4 5 5 5 5
4 4 4 4 4 4 4 2 1	Finger Ext.	2 4 4 4 4 5 5 5 5
4 4 4 4 4 4 4 2 1	Lumbricales	2 4 4 4 4 5 5 5 5
4 4 4 4 4 4 4 2 1	Dors. Inteross.	2 4 4 4 4 5 5 5 5
4 4 4 4 4 4 4 2 1	Abd. Min. Digit	2 4 4 4 4 5 5 5 5
4 4 4 4 4 4 4 2 1	Palm. Inteross.	2 4 4 4 4 5 5 5 5
4 4 4 4 4 4 4 2 1	———	
4 4 4 4 4 4 4 2 1	Flex. Long. Poll.	2 4 4 4 4 5 5 5 5
4 4 4 4 4 4 4 2 1	Flex. Brev. Poll.	2 4 4 4 4 5 5 5 5
4 4 4 4 4 4 4 2 1	Ext. Long Poll.	2 4 4 4 4 5 5 5 5
4 4 4 4 4 4 4 2 1	Ext. Brev. Poll.	2 4 4 4 4 5 5 5 5
4 4 4 4 4 4 4 2 1	Abd. Poll. Longus	2 4 4 4 4 5 5 5 5
4 4 4 4 4 4 4 2 1	Abd. Poll. Brev.	2 4 4 4 4 5 5 5 5
4 4 4 4 4 4 4 2 1	Add. Poll.	2 4 4 4 4 5 5 5 5
4 4 4 4 4 4 4 2 1	Opponens Pollicis	2 4 4 4 4 5 5 5 5
	———	

BABINSTON. 139

LEFT LEG 1/2/39	4/4/38	2/2/38	2/8/37	DATE	RIGHT LEG 2/9/37	2/2/38	4/4/38	7/7/39
				MUSCLE POWER				
				Orbit				
				Facial				
				Mouth				
				Anterior Neck				
				Posterior Neck				
2	2	2	0	Back	1	1	1	1
				Respiration				
2	2	2	0	Quadratus Lumborum	1	1	1	1
1	1	1	0	Anterior Abdominals	0	1	1	1
1	1	1	0	Lateral Abdominals	0	1	1	1
				———				
0	0	0	0	Gluteus Maximus	0	0	0	0
0	0	0	0	Hip Flexors	0	0	0	0
0	0	0	0	Sartorius	0	0	0	0
0	0	0	0	Inward Rotation	0	0	0	0
0	0	0	0	Outward Rotation	0	0	0	0
0	0	0	0	Tensor Fasciæ Latæ	0	0	0	0
0	0	0	0	Hip Abductors	0	0	0	0
0	0	0	0	Hip Abductors	0	0	0	0
0	0	0	0	Quadriceps	0	0	0	0
0	0	0	0	Inner Hamstrings	0	0	0	0
0	0	0	0	Biceps	0	0	0	0
0	0	0	0	Gastrocnemius	0	0	0	0
0	0	0	0	Anterior Tibial	0	0	0	0
0	0	0	0	Posterior Tibial	0	0	0	0
0	0	0	0	Peroneals	0	0	0	0
0	0	0	0	Extensor Long. Digitorum	0	0	0	0
0	0	0	0	Extensor Prop. Hallucis	0	0	0	0
0	0	0	0	Flexor Long. Digitorum	0	0	0	0
0	0	0	0	Short Toe Flexors	0	0	0	0
0	0	0	0	Flexor Long. Hallucis	0	0	0	0
				———				
				LENGTH OF LIMB:				
				Ant. Sup. Spine to Int. Mall.				
				Knee to Mallcolus				
				———				

LEFT ARM 9/2/39	9/3/39	11/11/38	9/9/38	6/6/38	4/4/38	2/8/38	10/12/37	2/8/37	DATE	RIGHT ARM 2/8/37	10/12/37	18/2/38	4/4/38	6/6/38	8/8/38	22/11/38	9/3/39	9/7/39
									MUSCLE POWER									
3	3	2	2	2	2	2	1	0	Anterior Deltoid	0	1	2	2	2	2	3	3	3
4	3	3	3	3	3	3	3	1	Posterior Deltoid	1	2	3	3	3	3	3	3	3
									Upper Trapezius									
1	1	1	1	1	1	1	1	1	Mid. Trapezius	1	1	1	1	1	1	1	1	1
									Low. Trapezius									
1	1	1	1	1	1	1	1	1	Serratus Magnus	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	Rhomboids	1	1	1	1	1	1	1	1	1
3	3	3	3	2	2	2	2	1	Latissimus Dorsi	1	2	2	2	3	3	3	3	4
2	2	2	2	2	2	2	1	0	Pect. Major	0	1	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	1	Outward Rotators	1	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	3	Biceps	2	4	4	4	4	4	4	4	4
3	3	3	3	2	2	2	1	1	Triceps	1	3	3	3	3	3	3	3	3
4	4	4	3	2	1	1	1	1	Supinator	0	0	0	0	1	2	2	2	3
4	4	4	4	3	3	3	3	2	Pronators	1	3	3	3	4	4	4	4	4
4	4	4	4	4	4	3	3	3	Flexor Carpi Rad.	3	3	3	3	3	3	3	4	4
4	4	4	4	4	4	3	3	3	Flexor Carpi Uln.	4	4	4	4	4	4	4	4	4
3	3	3	3	3	3	3	3	1	Extensor Carpi Rad.	1	3	3	3	3	3	3	3	3
3	3	3	3	3	3	3	3	1	Extensor Carpi Uln.	1	3	3	3	3	3	3	3	3
									Flex. Prof. Digit									
4	4	4	4	3	3	3	3	1	Flex. Sub. Digit	2	3	3	3	3	4	4	4	4
4	4	4	3	3	3	3	3	1	Finger Ext.	1	3	3	3	3	4	4	4	4
									Lumbricales									
3	3	3	3	3	3	3	3	3	Dors. Inteross.	2	2	2	2	2	2	2	3	3
									Abd. Min. Digit									
3	3	3	3	3	3	3	3	3	Palm. Inteross.	2	2	3	3	3	3	3	3	3
									———									
3	3	3	3	3	3	3	3	2	Flex. Long. Poll.	1	2	2	2	2	3	3	3	3
									Flex. Brev. Poll.									
3	3	3	3	3	3	3	3	2	Ext. Long Poll.	1	3	3	3	3	3	3	3	3
									Ext. Brev. Poll.									
3	3	3	3	3	3	3	3	2	Abd. Poll. Longus	1	2	2	2	2	3	3	3	3
									Abd. Poll. Brev.									
3	3	3	3	3	3	3	3	2	Add. Poll.	1	2	2	2	2	3	3	3	3
3	3	3	3	3	3	3	3	1	Opponens Pollicis	1	2	2	2	2	3	3	3	3
									———									

BARBARA ALLAN. 68.

LEFT LEG	DATE	RIGHT LEG
2 1 / III XI / 39 38	14 16 / VII / 38	25 / V / 38	11 / 38	2 / XI / 37	27 / I / 37	
	MUSCLE POWER	
	Orbit	
	Facial	
	Mouth	
	Anterior Neck	
	Posterior Neck	
5 5 5 5 5 5	Back	
	Respiration	
5 5 5 5 5 5	Quadratus Lumborum	
4 4 4 4 4 4	Anterior Abdominals	
4 4 4 4 4 4	Lateral Abdominals	
	———	
2 2 2 2 2 1	Gluteus Maximus	
3 3 3 3 3 0	Hip Flexors	
2 2 2 2 2 1	Sartorius	
3 3 3 3 3 2	Inward Rotation	
4 4 4 4 4 1	Outward Rotation	
2 2 2 2 2 1	Tensor Fasciæ Latæ	
2 2 2 2 2 1	Hip Abductors	
2 3 3 3 3 1	Hip Adductors	
4 4 4 4 4 2	Quadriceps	
1 2 2 2 2 0	Inner Hamstrings	
1 2 2 2 2 0	Biceps	
1 1 1 0 0 0	Gastrocnemius	
1 1 1 0 0 0	Anterior Tibial	
1 1 1 0 0 0	Posterior Tibial	
0 0 0 0 0 0	Peroneals	
2 2 2 2 2 0	Extensor Long. Digitorum	
2 2 2 2 2 0	Extensor Prop. Hallucis	
3 3 3 3 3 1	Flexor Long. Digitorum	
	Short Toe Flexors	
3 3 3 3 3 1	Flexor Long. Hallucis	
	———	
	LENGTH OF LIMB:	
	Ant. Sup. Spine to Int. Mall.	
	Knee to Mallcolus	
	———	

LEFT ARM	DATE	RIGHT ARM
	MUSCLE POWER	
	Anterior Deltoid	
	Posterior Deltoid	
	Upper Trapezius	
	Mid. Trapezius	
	Low. Trapezius	
	Serratus Magnus	
	Rhomboids	
	Latissimus Dorsi	
	Pect. Major	
	Outward Rotators	
	Biceps	
	Triceps	
	Supinator	
	Pronators	
	Flexor Carpi Rad.	
	Flexor Carpi Uln.	
	Extensor Carpi Rad.	
	Extensor Carpi Uln.	
	Flex. Prof. Digit	
	Flex. Sub. Digit	
	Finger Ext.	
	Lumbricales	
	Dors. Inteross.	
	Abd. Min. Digit	
	Palm. Inteross.	
	———	
	Flex. Long. Poll.	
	Flex. Brev. Poll.	
	Ext. Long Poll.	
	Ext. Brev. Poll.	
	Abd. Poll. Longus	
	Abd. Poll. Brev.	
	Add. Poll.	
	Opponens Pollicis	
	———	

T. McADAM. 22

LEFT LEG	DATE	RIGHT LEG
29 : 27 : 20 : 9 : 26 3 : 8 : 4 : 12 : 3 39 : 35 : 35 : 37 : 36		
	MUSCLE POWER	
	Orbit	
	Facial	
	Mouth	
	Anterior Neck	
	Posterior Neck	
	Back	
	Respiration	
	Quadratus Lumborum	
	Anterior Abdominals	
	Lateral Abdominals	
	———	
2+ : 2+ : 2 : 2 : 1	Gluteus Maximus	1 : 1 : 2 : 2+ : 2+
2 : 1 : 1 : 1 : 0	Hip Flexors	0 : 1 : 1 : 1 : 1
3 : 2+ : 2 : 2 : 1	Sartorius	0 : 1 : 1 : 2 : 2
4 : 3 : 2 : 1 : 0	Inward Rotation	0 : 1 : 1 : 2 : 2
4 : 4 : 3 : 2 : 1	Outward Rotation	1 : 2 : 2+ : 3 : 3
2+ : 2+ : 2+ : 2 : 0	Tensor Fasciæ Latæ	0 : 1 : 1+ 1+ 1+
2+ : 2+ : 2+ : 2+ : 1	Hip Abductors	1 2 2 2 2
3+ : 2+ : 2 : 1 : 0	Hip Abductors	0 1 1 2 2
4 : 2+ : 2+ : 2 : 1	Quadriceps	2 2 2 3 3
3 : 3 : 3 : 2+ : 2	Inner Hamstrings	2 2 2 2+ 3+
3 : 2 : 2 : 1 : 0	Biceps	1 2+ 3 3 3+
4 : 4 : 4 : 4 : 2	Gastrocnemius	0 ? 1 1 1
2+ : 2+ : 1 : 1 : 0	Anterior Tibial	0 ? 1 1 1
2 : 2 : 3 : 1 : 0	Posterior Tibial	2 2+ 2+ 3 4
4+ : 4 : 3 : 3 : 2	Peroneals	0 1 1 2 3
4 : 3 : 3 : 2+ : 1	Extensor Long. Digitorum	0 2 2+ 3 3
4 : 3 : 3 : 2+ : 1	Extensor Prop. Hallucis	2 2+ 3 3 3
4+ : 4 : 4 : 3 : 3	Flexor Long. Digitorum	2 2 2 3 3
3 : 3 : 3 : 2 : 2	Short Toe Flexors	1 2+ 3 3 3
4 : 3 : 3 : 3 : 2	Flexor Long. Hallucis	
	———	
	LENGTH OF LIMB:	
	Ant. Sup. Spine to Int. Mall.	
	Knee to Mallcolus	
	———	

LEFT ARM	DATE	RIGHT ARM
	MUSCLE POWER	
	Anterior Deltoid	
	Posterior Deltoid	
	Upper Trapezius	
	Mid. Trapezius	
	Low. Trapezius	
	Serratus Magnus	
	Rhomboids	
	Latissimus Dorsi	
	Pect. Major	
	Outward Rotators	
	Biceps	
	Triceps	
	Supinator	
	Pronators	
	Flexor Carpi Rad.	
	Flexor Carpi Uln.	
	Extensor Carpi Rad.	
	Extensor Carpi Uln.	
	Flex. Prof. Digit	
	Flex. Sub. Digit	
	Finger Ext.	
	Lumbricales	
	Dors. Inteross.	
	Abd. Min. Digit	
	Palm. Inteross.	
	———	
	Flex. Long. Poll.	
	Flex. Brev. Poll.	
	Ext. Long Poll.	
	Ext. Brev. Poll.	
	Abd. Poll. Longus	
	Abd. Poll. Brev.	
	Add. Poll.	
	Opponens Pollicis	
	———	

JOHN McLEAN. 36

LEFT LEG 4/3/39	13/8/38	9/2/39	10/8/37	16/1/36	DATE	RIGHT LEG 16/1/36	12/37	2/2/38	13/8/38	4/3/39
					MUSCLE POWER					
					Orbit					
					Facial					
					Mouth					
					Anterior Neck					
					Posterior Neck					
4	4	4	3	0	Back	0	1	2	2	2
					Respiration					
1	1	1	1	0	Quadratus Lumborum	0	1	1	1	1
1	1	1	1	0	Anterior Abdominals	0	1	1	1	1
1	1	1	1	0	Lateral Abdominals	0	1	1	1	1
					———					
0	0	0	0	0	Gluteus Maximus					
					Hip Flexors					
					Sartorius					
					Inward Rotation					
					Outward Rotation					
					Tensor Fasciæ Latæ					
					Hip Abductors					
					Hip Abductors					
					Quadriceps					
					Inner Hamstrings					
					Biceps					
					Gastrocnemius					
					Anterior Tibial					
					Posterior Tibial					
					Peroneals					
4	4	4	0	0	Extensor Long. Digitorum					
					Extensor Prop. Hallucis					
2	2	2	2	0	Flexor Long. Digitorum					
					Short Toe Flexors					
					Flexor Long. Hallucis					
					———					
					LENGTH OF LIMB:					
					Ant. Sup. Spine to Int. Mall.					
					Knee to Mallcolus					
					———					

LEFT ARM	DATE	RIGHT ARM
	MUSCLE POWER	
	Anterior Deltoid	
	Posterior Deltoid	
	Upper Trapezius	
	Mid. Trapezius	
	Low. Trapezius	
	Serratus Magnus	
	Rhomboids	
	Latissimus Dorsi	
	Pect. Major	
	Outward Rotators	
	Biceps	
	Triceps	
	Supinator	
	Pronators	
	Flexor Carpi Rad.	
	Flexor Carpi Uln.	
	Extensor Carpi Rad.	
	Extensor Carpi Uln.	
	Flex. Prof. Digit	
	Flex. Sub. Digit	
	Finger Ext.	
	Lumbricales	
	Dors. Inteross.	
	Abd. Min. Digit	
	Palm. Inteross.	
	———	
	Flex. Long. Poll.	
	Flex. Brev. Poll.	
	Ext. Long Poll.	
	Ext. Brev. Poll.	
	Abd. Poll. Longus	
	Abd. Poll. Brev.	
	Add. Poll.	
	Opponens Pollicis	
	———	

3. CASES ADMITTED MORE THAN 1 YEAR AFTER ACUTE ATTACK.

C. McEwan 84 Admitted 1½ after onset.

LEFT LEG	DATE	14/11/37	RIGHT LEG 5/11/38	24/11/38	28/V/38
	MUSCLE POWER				
	Orbit				
	Facial				
	Mouth				
	Anterior Neck				
	Posterior Neck				
	Back	4	4	4	4
	Respiration				
	Quadratus Lumborum	4	4	4	4
	Anterior Abdominals	4	4	4	4
	Lateral Abdominals	4	4	4	4
	Gluteus Maximus	0	2	3	4
	Hip Flexors	1	1	2	2
	Sartorius	1	1	2	2
	Inward Rotation	0	1	1	2
	Outward Rotation	0	1	1	2
	Tensor Fasciæ Latæ	1	1	2	3
	Hip Abductors	1	1	2	3
	Hip Adductors	0	1	1	1
	Quadriceps	1	2	3	3
	Inner Hamstrings	0	1	1	1
	Biceps	0	1	1	1
	Gastrocnemius	1	2	2	3
	Anterior Tibial	0	0	1	1
	Posterior Tibial	0	1	1	2
	Peroneals	1	3	3	4
	Extensor Long. Digitorum	2	3	3	4
	Extensor Prop. Hallucis	2	3	3	4
	Flexor Long. Digitorum	1	2	3	3
	Short Toe Flexors	1	2	3	3
	Flexor Long. Hallucis	1	2	3	3
	LENGTH OF LIMB:				
	Ant. Sup. Spine to Int. Mall.				
	Knee to Mallcolus				

LEFT ARM	DATE	RIGHT ARM
	MUSCLE POWER	
	Anterior Deltoid	
	Posterior Deltoid	
	Upper Trapezius	
	Mid. Trapezius	
	Low. Trapezius	
	Serratus Magnus	
	Rhomboids	
	Latissimus Dorsi	
	Pect. Major	
	Outward Rotators	
	Biceps	
	Triceps	
	Supinator	
	Pronators	
	Flexor Carpi Rad.	
	Flexor Carpi Uln.	
	Extensor Carpi Rad.	
	Extensor Carpi Uln.	
	Flex. Prof. Digit	
	Flex. Sub. Digit	
	Finger Ext.	
	Lumbricales	
	Dors. Inteross.	
	Abd. Min. Digit	
	Palm. Inteross.	
	Flex. Long. Poll.	
	Flex. Brev. Poll.	
	Ext. Long Poll.	
	Ext. Brev. Poll.	
	Abd. Poll. Longus	
	Abd. Poll. Brev.	
	Add. Poll.	
	Opponens Pollicis	

Robert Bell 82. Admitted 17/12 after onset

LEFT LEG 30/VI/38	24/X/38	3/III/38	7/XII/37	DATE	RIGHT LEG 7/VI/37	3/III/38	2/X/38	30/VI/38
				MUSCLE POWER				
				Orbit				
				Facial				
				Mouth				
				Anterior Neck				
				Posterior Neck				
5	4	4	4	Back	4	4	4	5
				Respiration				
5	4	4	4	Quadratus Lumborum	4	4	4	5
5	4	4	4	Anterior Abdominals	4	4	4	5
5	4	4	4	Lateral Abdominals	4	4	4	5
4	4	4	3	Gluteus Maximus	4	4	4	5
5	4	4	4	Hip Flexors	4	4	4	5
5	4	4	4	Sartorius	4	4	4	5
4	4	4	4	Inward Rotation	4	4	4	5
4	4	4	4	Outward Rotation	4	4	4	5
4	4	4	3	Tensor Fasciæ Latæ	4	4	4	5
4	4	4	3	Hip Abductors	4	4	4	5
5	4	4	4	Hip Adductors	4	4	4	5
4	4	4	4	Quadriceps	4	4	4	5
4	4	4	4	Inner Hamstrings	4	4	4	5
4	4	4	4	Biceps	4	4	4	5
5	4	4	4	Gastrocnemius	4	4	4	5
3	2	2	1	Anterior Tibial	3	4	4	4
3	3	2	1	Posterior Tibial	3	4	4	4
4	4	4	4	Peroneals	4	4	4	5
4	4	4	3	Extensor Long. Digitorum	4	4	4	6
4	4	4	4	Extensor Prop. Hallucis	4	4	4	5
5	4	4	4	Flexor Long. Digitorum	4	4	4	5
5	4	4	4	Short Toe Flexors	4	4	4	5
5	4	4	4	Flexor Long. Hallucis	4	4	4	5
				LENGTH OF LIMB:				
				Ant. Sup. Spine to Int. Mall.				
				Knee to Mallcolus				

LEFT ARM	DATE	RIGHT ARM
	MUSCLE POWER	
	Anterior Deltoid	
	Posterior Deltoid	
	Upper Trapezius	
	Mid. Trapezius	
	Low. Trapezius	
	Serratus Magnus	
	Rhomboids	
	Latissimus Dorsi	
	Pect. Major	
	Outward Rotators	
	Biceps	
	Triceps	
	Supinator	
	Pronators	
	Flexor Carpi Rad.	
	Flexor Carpi Uln.	
	Extensor Carpi Rad.	
	Extensor Carpi Uln.	
	Flex. Prof. Digit	
	Flex. Sub. Digit	
	Finger Ext.	
	Lumbricales	
	Dors. Inteross.	
	Abd. Min. Digit	
	Palm. Inteross.	
	Flex. Long. Poll.	
	Flex. Brev. Poll.	
	Ext. Long Poll.	
	Ext. Brev. Poll.	
	Abd. Poll. Longus	
	Abd. Poll. Brev.	
	Add. Poll.	
	Opponens Pollicis	

M. COONEY. 73. admitted 18/12 after onset.

LEFT LEG 4/2/38	10/12/37	5/1/37	DATE	RIGHT LEG 5/1/37	12/3/37	4/2/38
			MUSCLE POWER			
			Orbit			
			Facial			
			Mouth			
			Anterior Neck			
			Posterior Neck			
3	3	1	Back	1	3	3
			Respiration			
3	3	1	Quadratus Lumborum	1	3	3
1	1	1	Anterior Abdominals	1	2	2
1	1	1	Lateral Abdominals	1	2	2
			———			
0	0	0	Gluteus Maximus	2	3	4
0	0	0	Hip Flexors	1	3	3
0	0	0	Sartorius	2	3	4
0	0	0	Inward Rotation	1	3	3
0	0	0	Outward Rotation	2	3	3
0	0	0	Tensor Fasciæ Latæ	1	3	4
0	0	0	Hip Abductors	1	3	4
0	0	0	Hip Adductors	1	3	3
0	0	0	Quadriceps	2	3	3
0	0	0	Inner Hamstrings	3	3	3
0	0	0	Biceps	3	3	3
0	0	0	Gastrocnemius	1	2	2
0	0	0	Anterior Tibial	2	3	3
0	0	0	Posterior Tibial	2	3	3
0	0	0	Peroneals	2	3	3
0	0	0	Extensor Long. Digitorum	2	3	3
0	0	0	Extensor Prop. Hallucis	2	3	3
0	0	0	Flexor Long. Digitorum	1	2	2
0	0	0	Short Toe Flexors			
0	0	0	Flexor Long. Hallucis	1	2	2
			———			
			LENGTH OF LIMB:			
			Ant. Sup. Spine to Int. Mall.			
			Knee to Mallcolus			
			———			

LEFT ARM	DATE	RIGHT ARM
	MUSCLE POWER	
	Anterior Deltoid	
	Posterior Deltoid	
	Upper Trapezius	
	Mid. Trapezius	
	Low. Trapezius	
	Serratus Magnus	
	Rhomboids	
	Latissimus Dorsi	
	Pect. Major	
	Outward Rotators	
	Biceps	
	Triceps	
	Supinator	
	Pronators	
	Flexor Carpi Rad.	
	Flexor Carpi Uln.	
	Extensor Carpi Rad.	
	Extensor Carpi Uln.	
	Flex. Prof. Digit	
	Flex. Sub. Digit	
	Finger Ext.	
	Lumbricales	
	Dors. Inteross.	
	Abd. Min. Digit	
	Palm. Inteross.	
	———	
	Flex. Long. Poll.	
	Flex. Brev. Poll.	
	Ext. Long Poll.	
	Ext. Brev. Poll.	
	Abd. Poll. Longus	
	Abd. Poll. Brev.	
	Add. Poll.	
	Opponens Pollicis	
	———	

K McDONALD 113 Admitted 19/12 after onset

LEFT LEG	DATE	RIGHT LEG
	MUSCLE POWER	
	Orbit	
	Facial	
	Mouth	
	Anterior Neck	
	Posterior Neck	
	Back	
	Respiration	
	Quadratus Lumborum	
	Anterior Abdominals	
	Lateral Abdominals	
	Gluteus Maximus	
	Hip Flexors	
	Sartorius	
	Inward Rotation	
	Outward Rotation	
	Tensor Fasciæ Latæ	
	Hip Abductors	
	Hip Abductors	
	Quadriceps	
	Inner Hamstrings	
	Biceps	
	Gastrocnemius	
	Anterior Tibial	
	Posterior Tibial	
	Peroneals	
	Extensor Long. Digitorum	
	Extensor Prop. Hallucis	
	Flexor Long. Digitorum	
	Short Toe Flexors	
	Flexor Long. Hallucis	
	LENGTH OF LIMB:	
	Ant. Sup. Spine to Int. Mall.	
	Knee to Mallcolus	

LEFT ARM	DATE	RIGHT ARM
NORMAL		13/V/38 · 23/IX/38 · 1/XI/38
	MUSCLE POWER	
	Anterior Deltoid	1 1 1
	Posterior Deltoid	2 2 2
	Upper Trapezius	3 4 4
	Mid. Trapezius	3 4 4
	Low. Trapezius	3 3 3
	Serratus Magnus	1 1 2
	Rhomboids	2 3 3
	Latissimus Dorsi	2 1 2
	Pect. Major	1 1 1
	Outward Rotators	2 2 2
	Biceps	0 0 0
	Triceps	0 0 0
	Supinator	0 0 0
	Pronators	0 0 0
	Flexor Carpi Rad.	0 0 0
	Flexor Carpi Uln.	0 0 0
	Extensor Carpi Rad.	2 2 2
	Extensor Carpi Uln.	2 2 2
	Flex. Prof. Digit	0 0 0
	Flex. Sub. Digit	0 0 0
	Finger Ext.	2 2 2
	Lumbricales	0 0 0
	Dors. Inteross.	0 0 0
	Abd. Min. Digit	0 0 0
	Palm. Inteross.	0 0 0
	Flex. Long. Poll.	0 0 0
	Flex. Brev. Poll.	0 0 0
	Ext. Long Poll.	0 0 0
	Ext. Brev. Poll.	0 0 0
	Abd. Poll. Longus	0 0 0
	Abd. Poll. Brev.	0 0 0
	Add. Poll.	0 0 0
	Opponens Pollicis	0 0 0

M. McLAREN. 46 Admitted 2 yrs after onset

LEFT LEG	DATE	RIGHT LEG
	MUSCLE POWER	
	Orbit	
	Facial	
	Mouth	
	Anterior Neck	
	Posterior Neck	
	Back	
	Respiration	
	Quadratus Lumborum	
	Anterior Abdominals	
	Lateral Abdominals	
	———	
	Gluteus Maximus	
	Hip Flexors	
	Sartorius	
	Inward Rotation	
	Outward Rotation	
	Tensor Fasciæ Latæ	
	Hip Abductors	
	Hip Abductors	
	Quadriceps	
	Inner Hamstrings	
	Biceps	
	Gastrocnemius	
	Anterior Tibial	
	Posterior Tibial	
	Peroneals	
	Extensor Long. Digitorum	
	Extensor Prop. Hallucis	
	Flexor Long. Digitorum	
	Short Toe Flexors	
	Flexor Long. Hallucis	
	———	
	LENGTH OF LIMB:	
	Ant. Sup. Spine to Int. Mall.	
	Knee to Mallcolus	
	———	

LEFT ARM	DATE	RIGHT ARM VII/39	X/38	XI/39
	MUSCLE POWER			
	Anterior Deltoid	4	4	4
	Posterior Deltoid	4	4	4
	Upper Trapezius	5	5	5
	Mid. Trapezius	5	5	5
	Low. Trapezius	5	5	5
	Serratus Magnus			
	Rhomboids			
	Latissimus Dorsi	4	5	5
	Pect. Major	4	5	5
	Outward Rotators	4	4	4
	Biceps	5	5	5
	Triceps	2	3	4
	Supinator	3	3	4
	Pronators	4	4	4
	Flexor Carpi Rad.	3	4	4
	Flexor Carpi Uln.	4	4	4
	Extensor Carpi Rad.	4	4	4
	Extensor Carpi Uln.	4	4	4
	Flex. Prof. Digit	4	4	4
	Flex. Sub. Digit	4	4	4
	Finger Ext.	3	3	3
	Lumbricales			
	Dors. Inteross.	4	4	4
	Abd. Min. Digit	4	4	4
	Palm. Inteross.	4	4	4
	———			
	Flex. Long. Poll.	4	4	4
	Flex. Brev. Poll.	4	4	4
	Ext. Long Poll.	3	3	3
	Ext. Brev. Poll.	3	3	3
	Abd. Poll. Longus	3	3	3
	Abd. Poll. Brev.	3	3	3
	Add. Poll.	3	3	3
	Opponens Pollicis	2	2	3
	———			

T. THOMSON 65 Admitted 3 yrs after onset

LEFT LEG 2/5/38	27/7/36	4/1/36	DATE	4/1/36	RIGHT LEG 7/7/37	5/5/38	24/9/38	10/12/38
			MUSCLE POWER					
			Orbit					
			Facial					
			Mouth					
			Anterior Neck					
			Posterior Neck					
5	5	4	Back	5	5	5	5	5
~~6~~	~~5~~		Respiration					
5	5	4	Quadratus Lumborum	5	5	5	5	5
5	5	4	Anterior Abdominals	4	5	5	5	5
5	5	3	Lateral Abdominals	3	5	5	5	5

5	5	4	Gluteus Maximus	4	5	5	5	5
5	5	4	Hip Flexors	3	5	5	5	5
5	5	4	Sartorius	3	5	5	5	5
5	5	4	Inward Rotation	3	5	5	5	5
5	5	4	Outward Rotation	3	5	5	5	5
5	5	4	Tensor Fasciæ Latæ	4	5	5	5	5
5	5	4	Hip Abductors	4	5	5	5	5
5	5	5	Hip Adductors	4	5	5	5	5
5	5	4	Quadriceps	2	2	2	2	2
5	5	4	Inner Hamstrings	4	5	5	5	5
5	5	4	Biceps	4	5	5	5	5
5	5	4	Gastrocnemius	2	5	5	5	5
5	5	4	Anterior Tibial	0	0	0	0	0
5	5	4	Posterior Tibial	0	0	0	0	1
5	5	4	Peroneals	4	5	5	5	5
5	5	4	Extensor Long. Digitorum	3	5	5	5	5
5	5	4	Extensor Prop. Hallucis	5	5	5	5	5
5	5	4	Flexor Long. Digitorum	2	5	4	5	5
5	5	4	Short Toe Flexors	4	4	4	4	5
6	5	4	Flexor Long. Hallucis	2	5	4	5	6

			LENGTH OF LIMB:					
17"			Ant. Sup. Spine to Int. Mall.	17 5/8				
7 1/8			Knee to Mallcolus	7 3/8				

LEFT ARM	DATE	RIGHT ARM
	MUSCLE POWER	
	Anterior Deltoid	
	Posterior Deltoid	
	Upper Trapezius	
	Mid. Trapezius	
	Low. Trapezius	
	Serratus Magnus	
	Rhomboids	
	Latissimus Dorsi	
	Pect. Major	
	Outward Rotators	
	Biceps	
	Triceps	
	Supinator	
	Pronators	
	Flexor Carpi Rad.	
	Flexor Carpi Uln.	
	Extensor Carpi Rad.	
	Extensor Carpi Uln.	
	Flex. Prof. Digit	
	Flex. Sub. Digit	
	Finger Ext.	
	Lumbricales	
	Dors. Inteross.	
	Abd. Min. Digit	
	Palm. Inteross.	

	Flex. Long. Poll.	
	Flex. Brev. Poll.	
	Ext. Long Poll.	
	Ext. Brev. Poll.	
	Abd. Poll. Longus	
	Abd. Poll. Brev.	
	Add. Poll.	
	Opponens Pollicis	

J McPHERSON 126. Admitted 4 yrs after onset.

LEFT LEG 15/6/39	21/4/39	9/1/39	DATE	RIGHT LEG 9/1/39	21/4/39	15/6/39
			MUSCLE POWER			
			Orbit			
			Facial			
			Mouth			
			Anterior Neck			
			Posterior Neck			
4	4	4	Back	4	4	4
			Respiration			
4	4	4	Quadratus Lumborum	4	4	4
4	4	4	Anterior Abdominals	4	4	4
3	3	3	Lateral Abdominals	4	4	4
5	5	5	Gluteus Maximus	4	4	4
3	3	3	Hip Flexors	3	3	3
3	3	3	Sartorius	3	4	4
2	1	1	Inward Rotation	2	3	3
3	2	2	Outward Rotation	3	3	3
3	3	3	Tensor Fasciæ Latæ	3	4	4
3	3	3	Hip Abductors	3	4	4
3	3	3	Hip Adductors	4	4	4
2	2	2	Quadriceps	4	4	4
3	3	2	Inner Hamstrings	4	4	4
3	3	2	Biceps	4	4	4
3	3	3	Gastrocnemius	4	4	4
Triple Arthrodesis =		0	Anterior Tibial	0	1	1
		1	Posterior Tibial	1	1	1
		3	Peroneals	3	3	3
		0	Extensor Long. Digitorum	4	4	4
3	3	3	Extensor Prop. Hallucis	4	4	4
1	1	1	Flexor Long. Digitorum	3	3	3
1	1	1	Short Toe Flexors	3	3	3
1	1	1	Flexor Long. Hallucis	3	3	3
			LENGTH OF LIMB:			
			Ant. Sup. Spine to Int. Mall.			
			Knee to Mallcolus			

LEFT ARM 15/6/39	21/4/39	9/2/39	9/1/39	DATE	RIGHT ARM 9/1/39	9/2/39	21/4/39	15/6/39
				MUSCLE POWER				
4	4	4	4	Anterior Deltoid	3	4	4	4
5	5	5	5	Posterior Deltoid	2	3	3	3
4	4	4	4	Upper Trapezius	2	3	3	3
4	4	4	4	Mid. Trapezius	3	3	3	3
4	4	4	4	Low. Trapezius	3	3	3	3
4	4	4	4	Serratus Magnus	2	3	3	3
4	4	4	4	Rhomboids	2	3	3	3
5	5	5	5	Latissimus Dorsi	2	2	2	2
5	5	5	5	Pect. Major	2	3	3	3
2	2	2	2	Outward Rotators	2	2	3	3
4	4	4	4	Biceps	3	3	4	4
3	3	3	3	Triceps	1	1	1	2
4	4	4	4	Supinator	1	2	2	2
3	3	3	3	Pronators	2	3	3	3
4	4	4	4	Flexor Carpi Rad.	1	1	1	1
4	4	4	4	Flexor Carpi Uln.	2	2	3	3
5	5	5	5	Extensor Carpi Rad.	3	3	3	3
5	5	5	5	Extensor Carpi Uln.	3	3	3	3
4	4	4	4	Flex. Prof. Digit	4	4	4	4
4	4	4	4	Flex. Sub. Digit	4	4	4	4
4	4	4	4	Finger Ext.	0	2	3	3
				Lumbricales				
4	4	4	4	Dors. Inteross.	1	1	1	1
4	4	4	4	Abd. Min. Digit	1	1	1	1
4	4	4	4	Palm. Inteross.	0	1	1	1
4	4	4	4	Flex. Long. Poll.	2	2	2	2
4	4	4	4	Flex. Brev. Poll.	2	2	2	2
4	4	4	4	Ext. Long Poll.	2	3	3	3
4	4	4	4	Ext. Brev. Poll.	2	3	3	3
4	4	4	4	Abd. Poll. Longus	0	1	1	1
4	4	4	4	Abd. Poll. Brev.	0	1	2	2
4	4	4	4	Add. Poll.	0	1	2	2
4	4	4	4	Opponens Pollicis	0	0	0	0